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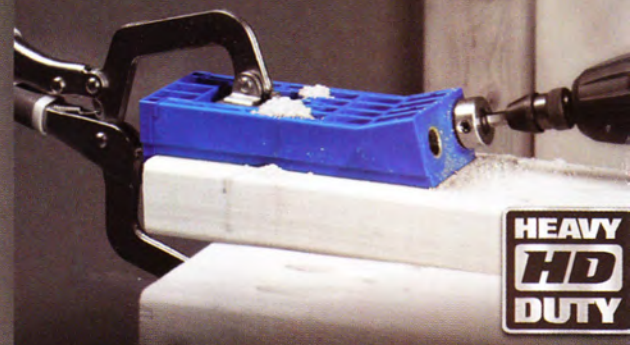
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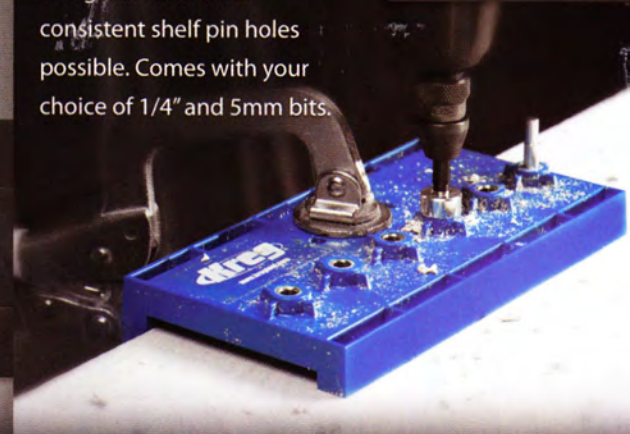
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The Shop Tips column in *WOOD*® magazine consistently ranks as one of our best-read features. And with good reason. Every published tip is proven effective in either a reader's shop or here in our own at *WOOD* magazine. Now, you can put these tested tips to use in your shop to make the best use of your valuable time, save money, get better results, or make an arduous task easier. It's these little nuggets of wisdom that make us all better woodworkers and make our time in the shop even more enjoyable.

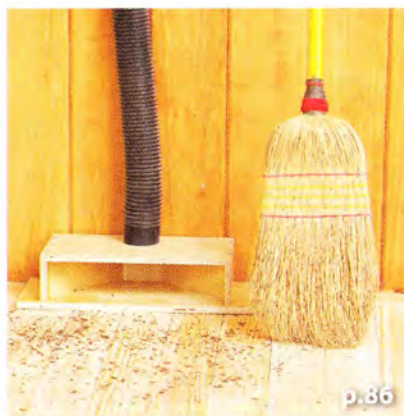


Marlen Kemmet

Marlen Kemmet
WOOD magazine Managing Editor



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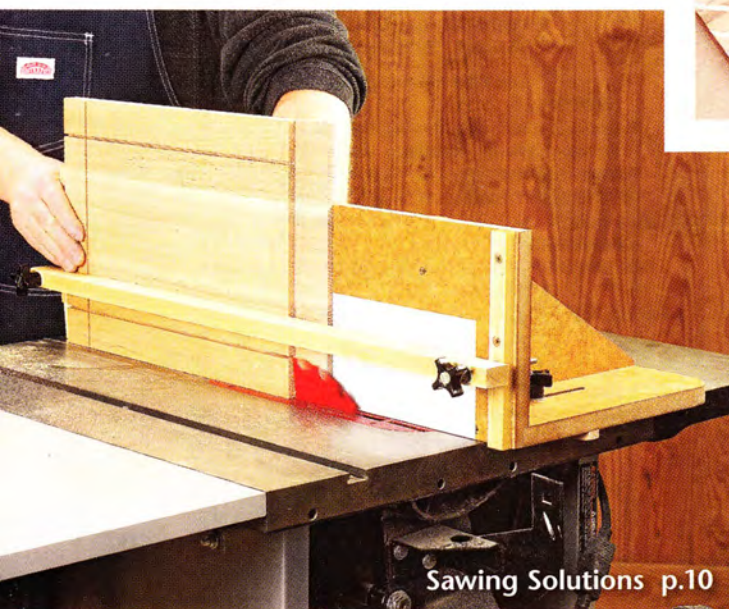
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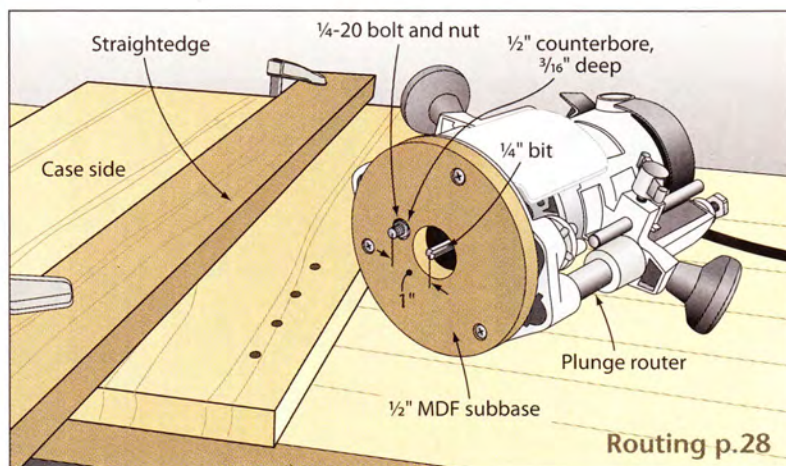
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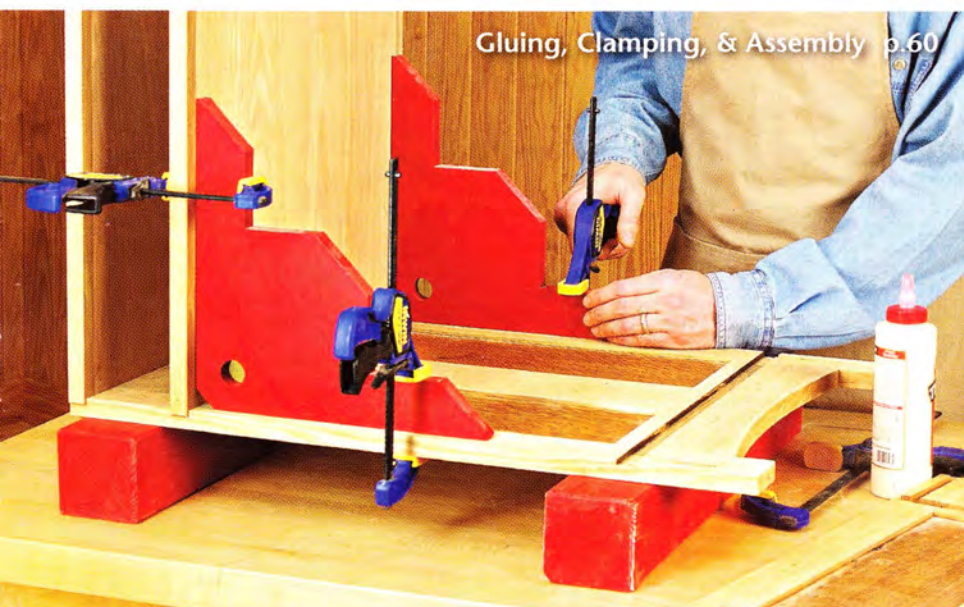
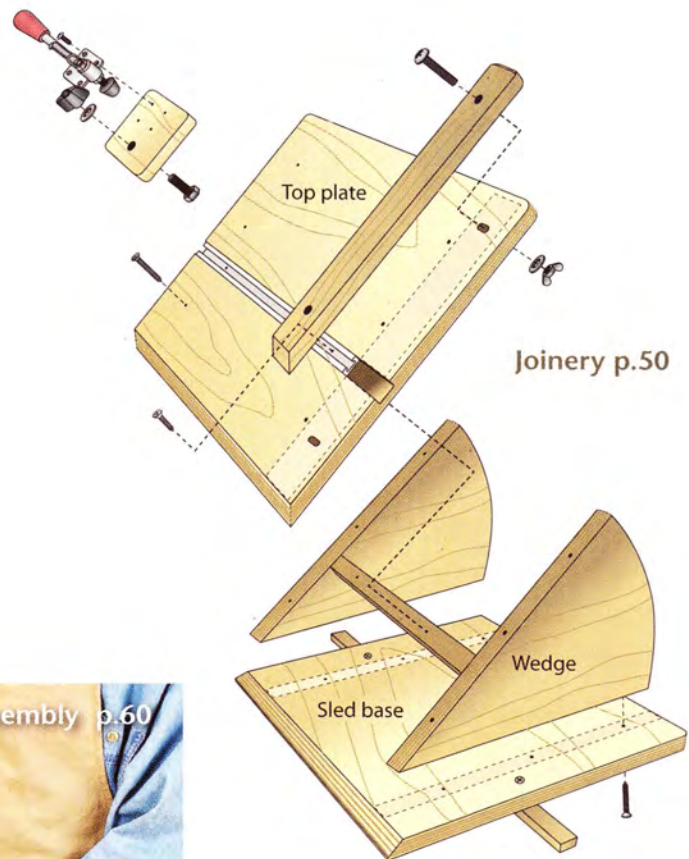


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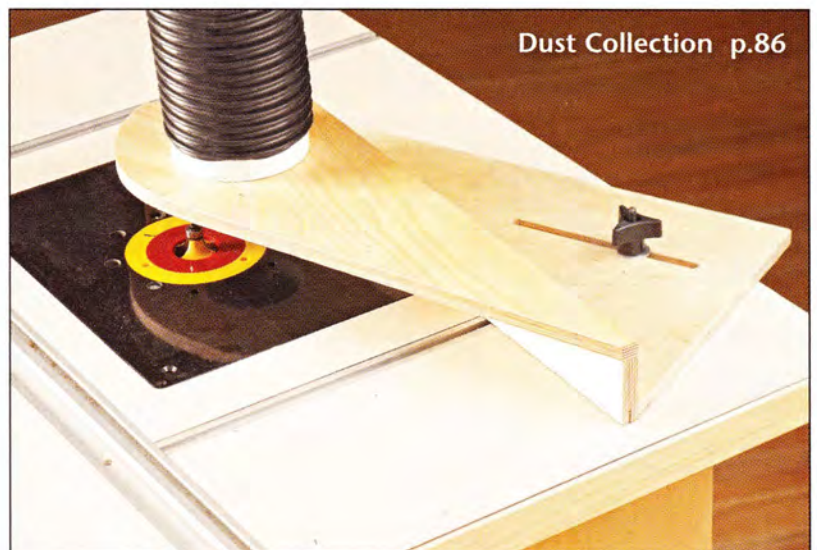
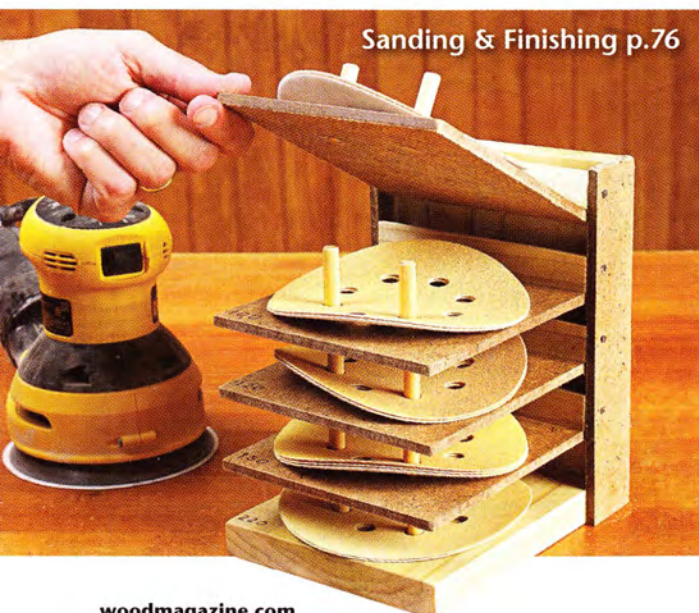
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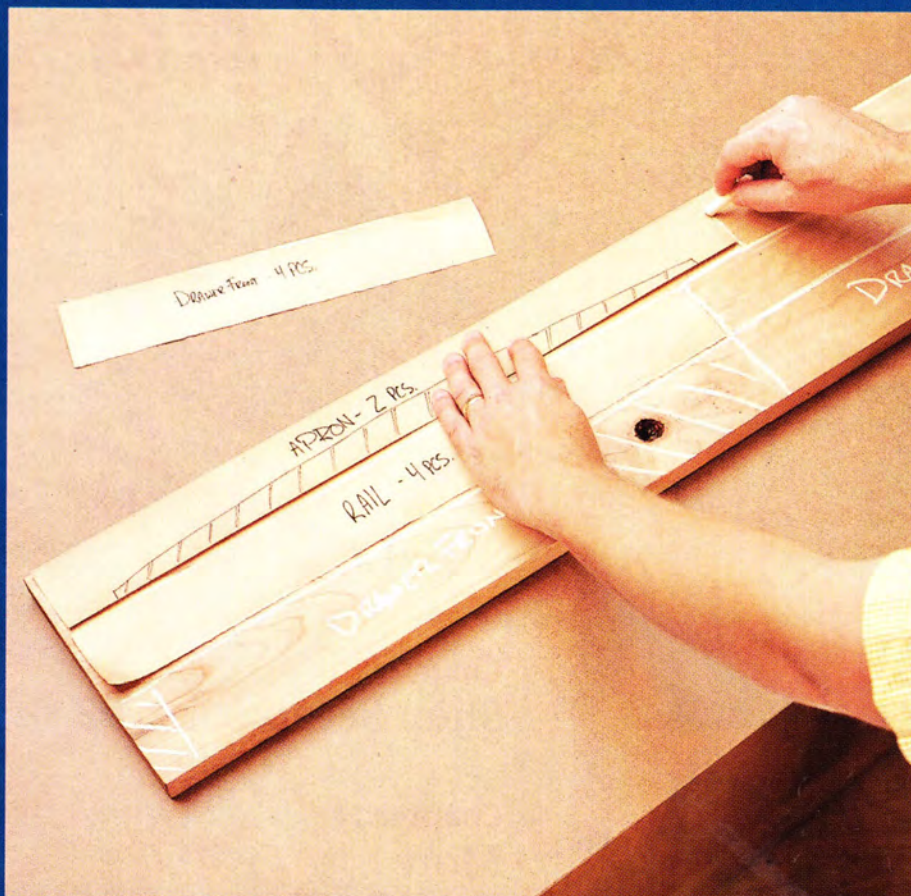


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Measuring & Marking



How much wood would I need for waste?

As a starting point, add 15 percent to your bill of materials. Then consider your project design. If there are odd-shaped parts, add 5 to 10 percent to that number. Add to that another 5 to 10 percent if you'll use sapwood-prone species, such as walnut or cherry. If you're shopping in the lower grades of wood—No. 1 or 2 common—you'll need to tack on an additional 30 percent to your order due to defects. That may sound like a lot, but it really makes sense when you realize that you could save up to 50 percent over Firsts and Seconds (FAS) lumber.

Finally, keep in mind that the wood you see in the bin at your hardwood store today could come from a different, mismatched source tomorrow. So buy a little extra—being too obsessive about avoiding all waste could hurt the look of your project if you need to make a return trip.

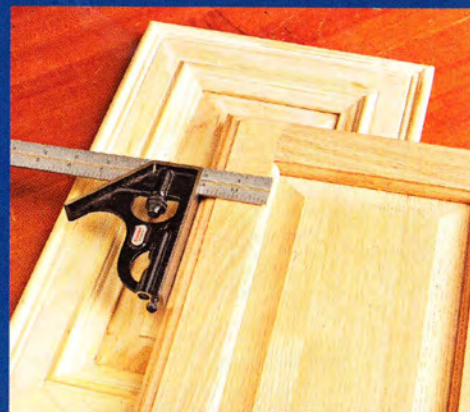
—from the **WOOD®** shop

Cabinetmakers set frame standards

There's good reason for making the door frames on your cabinets measure a standard 2" wide. Commercial cabinetmakers long ago settled on 2"-wide cabinet face frames and door frames as the industry standard. One reason they favored a 2"-wide frame is because it uses valuable hardwood efficiently without sacrificing strength. Also, the 2" width

suits many cabinet door sizes and styles without making the center panel look disproportionately small. For example, a 12" square door with 4"-wide frame pieces would have a disproportionately small center panel just 4" square. Frames that are slightly wider, say 2½" wide, still conform roughly to the standard.

—from the **WOOD** shop

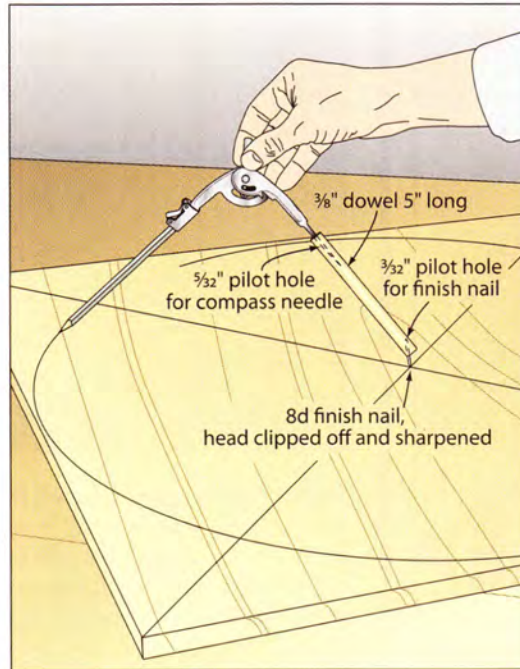


Long-legged compass draws circles around short-legged kin

When I needed to cut a large circle to make a holder for my air hose, the schoolroom compass I normally use for layout proved too small for the task. So I "stretched" the legs and increased the 12" capacity of the compass to scribe circles up to 22" in diameter.

Here's how to do the same: First, drill a hole in one end of a dowel to fit the compass needle. Then, drill a $\frac{3}{32}$ " pilot hole in the other end at a slight angle, as shown. Clip and sharpen the head of an 8d finish nail, and, using pliers, insert it into the angled hole. Slide the dowel assembly over the compass needle, replace the small compass pencil with a longer one, and you're ready to mark king-size circles.

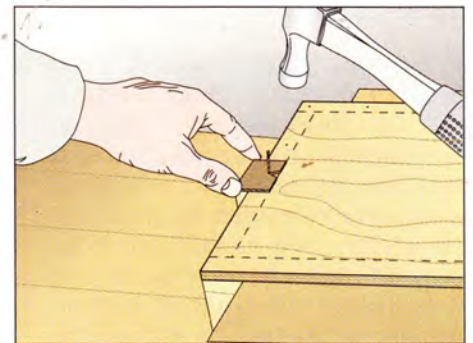
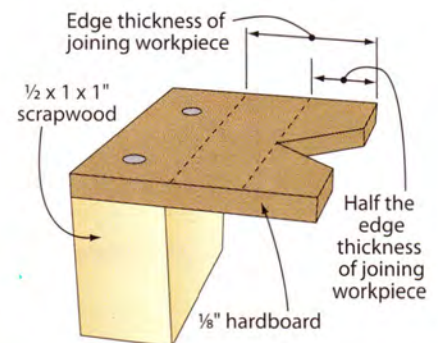
—Don Billmaier, Gilbertsville, Ky.



Nailing gauge puts 'em in the perfect spot every time

When driving screws or nails into a joint, I would either eyeball the row of fasteners (which sometimes sent them splitting out the back of the joint) or, if I was in a perfectionist mood, measure and mark a line (one I would later have to sand off). But recently, I stumbled on a third option: this simple edge-nailing gauge, inspired by the shape of a flat pry bar. The gauge not only helps me place the fastener dead center every time, it also helps steady the fastener, limits hammer dings, and makes a tidy row of the exposed heads. The gauge works so well, I made several more for different stock thicknesses.

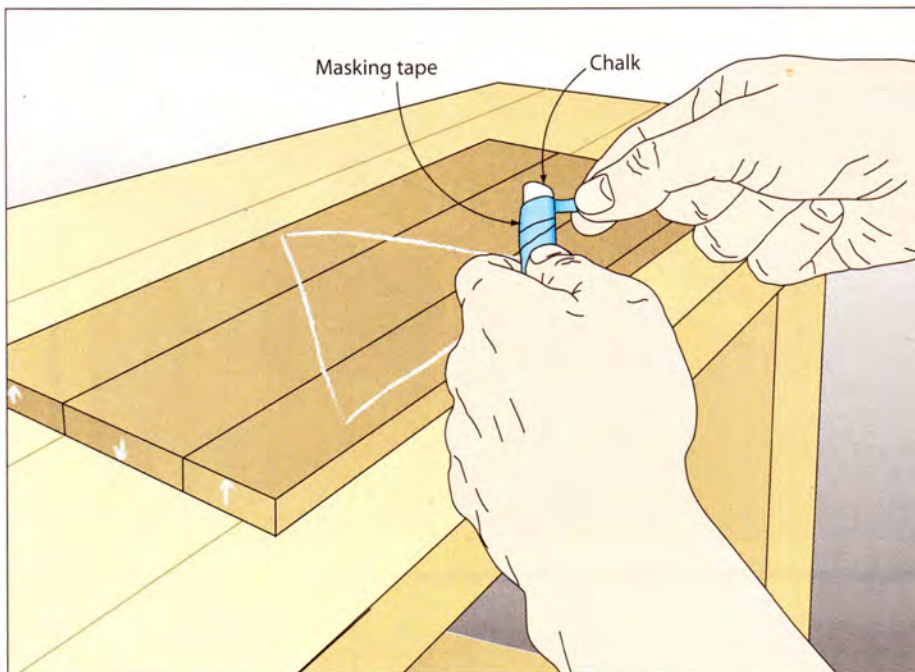
—R.B. Himes, Vienna, Ohio



Childlike solution to brittle chalk

Growing tired of my chalk breaking when marking on rough surfaces, I took a lesson from children's crayons. I wrapped masking tape around the chalk to reinforce it. After the chalk wears down I just tear off a little tape to expose more chalk. Works like a charm.

—Jose Salazar, Indian Springs, Nev.



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Sneak up on a perfectly planed workpiece

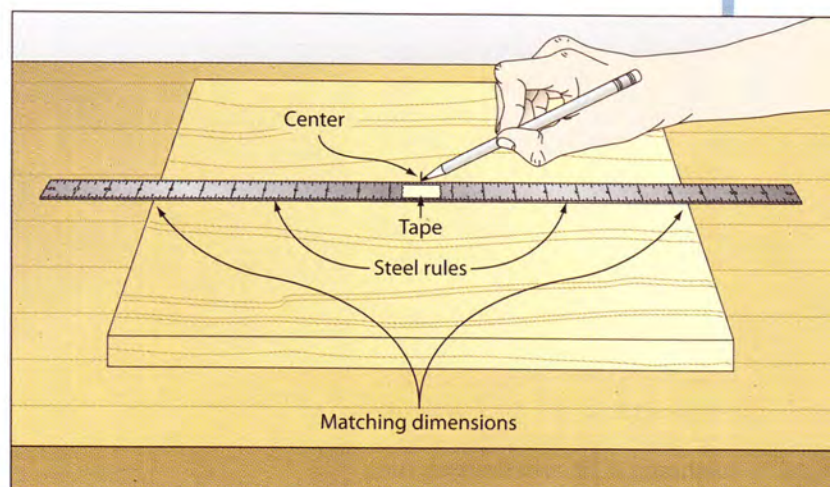
Don't trust your planer's thickness indicator? For perfectly thicknessed stock, make this reference gauge. To ensure precision, cut the dados with straight router bits ranging from $\frac{1}{8}$ " to $\frac{3}{4}$ "; then label them with a fine-tip marker.

After each pass on the planer, check your stock for fit in the appropriate dado. When the planed piece slides in, your thickness is perfect.

—Keith James, Reno, Nev.



DIY centering rule



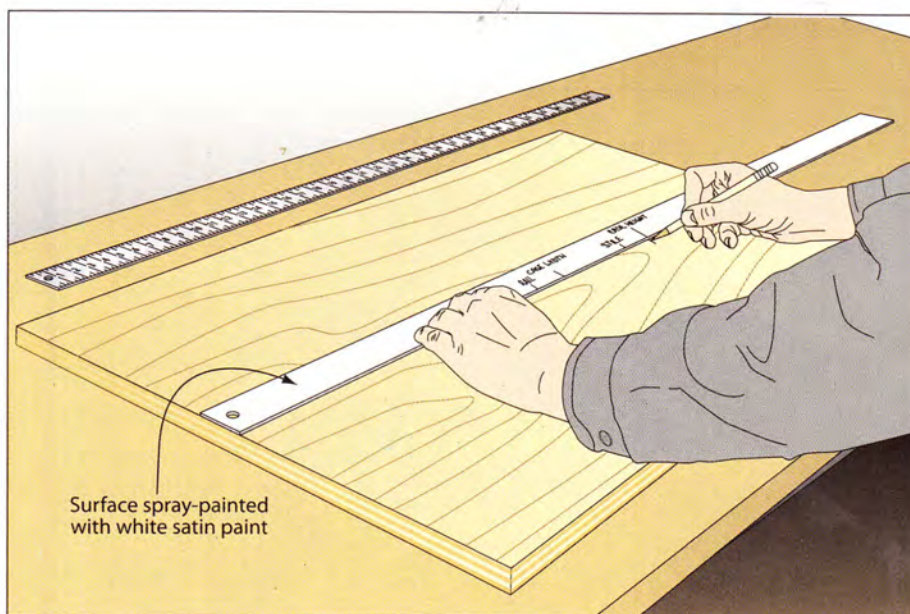
Next time you need to mark the center of a workpiece, slide the 0" ends of two steel rules together and fasten them with a piece of tape or a rare-earth magnet. Adjust the rules on the workpiece until the measurement at the edges reads the same on both rules, then mark the center where the rules meet.

—George Schok, Churchville, Pa.

Ensure accuracy with these triple-threat story sticks

My furniture-building accuracy improved dramatically when I started using story sticks—scraps of wood on which I lay out all of a project's critical dimensions and details. But I've carried the concept even further, making these three-in-one story sticks. I did it by spray-painting the backs of my 36" and 48" steel rulers with white satin paint. After the paint dried, I scuffed the paint lightly with 320-grit sandpaper so penciled story marks would show up well. Because the marks erase easily, I can use the rulers over and over as story sticks. Each one doubles as a straightedge. And, with a flip, triples as a ruler.

—Patrick Conroy, Erie, Colo.



A marking gauge makes multiples manageable

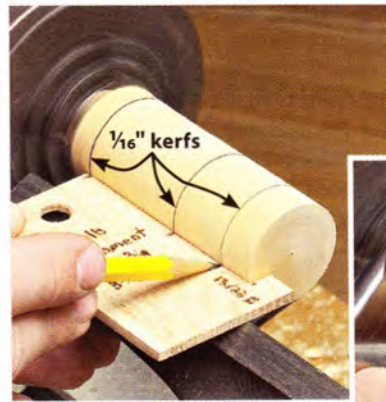
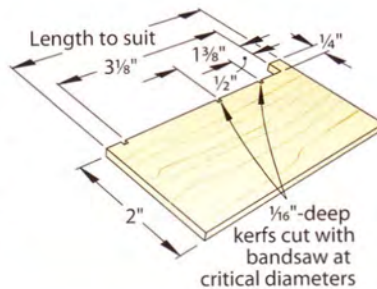
A project as quick and satisfying as this turned holiday ornament almost demands that you make multiples. To speed the marking of critical diameters, create this simple marking gauge.

Start with a piece of $\frac{1}{8}$ " stock. Bandsaw a strip from one of the long edges, leaving a $\frac{1}{4}$ " lip, as shown *near right*. Measure the critical diameters—in this case, $\frac{1}{2}$ ", $1\frac{3}{8}$ ", and $3\frac{1}{8}$ "—from the lip and mark. With your bandsaw, cut a $\frac{1}{16}$ " kerf at each mark—just enough to give your pencil lead a resting place.

To use the gauge, rest it on the tool rest and against the turning cylinder. Slide the lip until it stops against the

end. Then use the bandsaw kerfs as precise, repeatable pencil guides to mark the critical diameters, as shown at *right*.

—from the **WOOD**® shop



Give your pencil point knife-edge precision

When the width of your pencil line makes a difference between tight and not-so-tight miters, don't settle for heavy pencil marks. Mount 180-grit sandpaper on a flat surface and quickly sand the point to a chisel shape.

—Erv Roberts, Des Moines, Iowa



A simple system for marking square on big panels

Marking a square end on a large panel can pose a sizable challenge, especially if you don't trust your framing square to be perfectly square. The simple system shown here will allow you to accurately mark panels with your framing square.

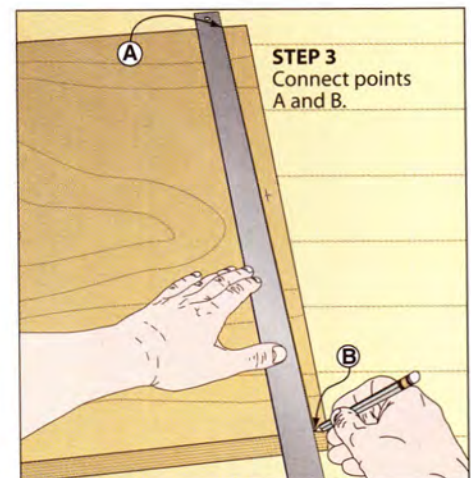
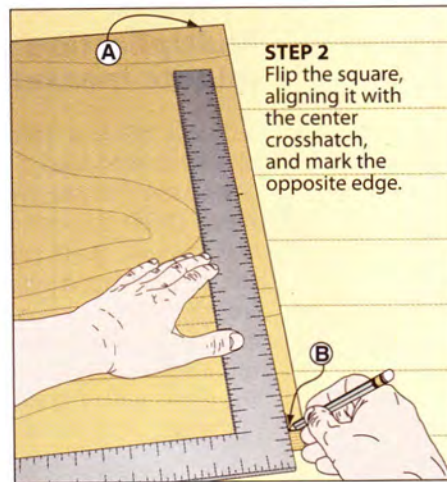
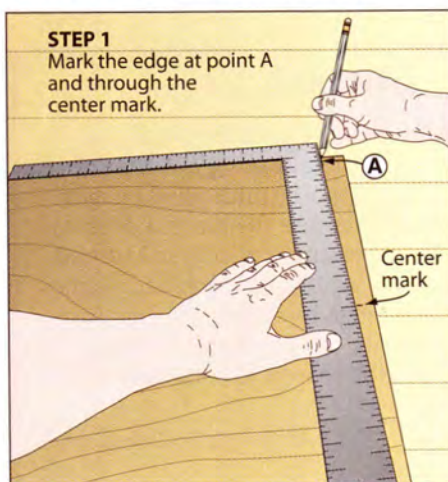
Before marking, rip your panel to width on the tablesaw so both edges are

parallel. Next, mark the center of the panel across its width.

With your square held against one edge, make a mark at the edge (Point A) and across the center mark to form a crosshatch. Flip the square to the opposite edge, aligning it with the center crosshatch, and mark the edge (Point B).

Using a straightedge, draw a line between points A and B. Measure from this line or cut along it for a square end. Because the sides are parallel and you marked from the center, even an out-of-true square will ensure a square cut.

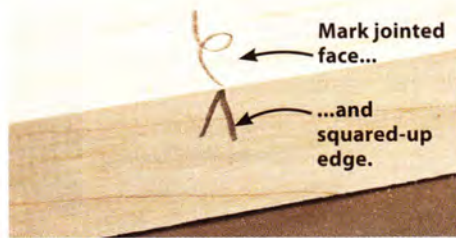
—Don Klimesh, Sylvania, Ohio



Marks keep things straight

As you machine stock, it can be hard to keep track of which face is flat and square to which edge. So, after your last pass, mark the newly machined surface. Traditionally, cabinetmakers draw a curlicue on the jointed face, and a caret, or inverted "V", on the adjacent squared-up edge, with the point directed to the flattened face.

—from the **WOOD®** shop



"Pocket" square measures extra large

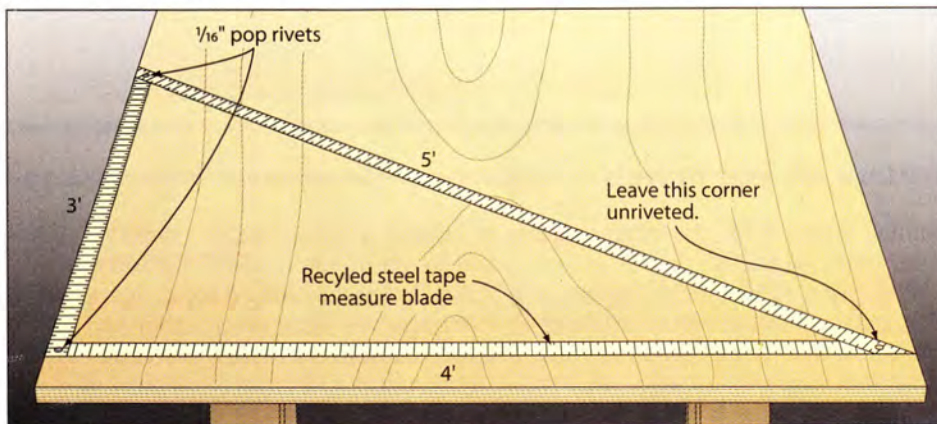
To check sheet goods for square, I use a collapsible, square-checking triangle. All it takes is the tape from a broken tape measure and some $\frac{1}{16}$ " pop rivets.

The triangle shown here is cut to 3', 4', and 5' legs, but you could make the sides any length so long as you maintain a ratio that is *exactly* 3-4-5. Tape the legs together at each corner and drill a $\frac{1}{16}$ " hole through both pieces at each intersection. Pop-rivet two of the angles together, leaving the joints loose to

allow both legs at each rivet location to rotate. For the third angle, insert the rivet into only one leg, leaving the two sides unattached.

When checking a project or a sheet of plywood for square, connect the legs of the open angle by loosely hooking the rivet into the hole. For easy storage, you can fold the triangle into a straight line, and roll it up.

—Mark Thorsell, Golden Valley, Minn.

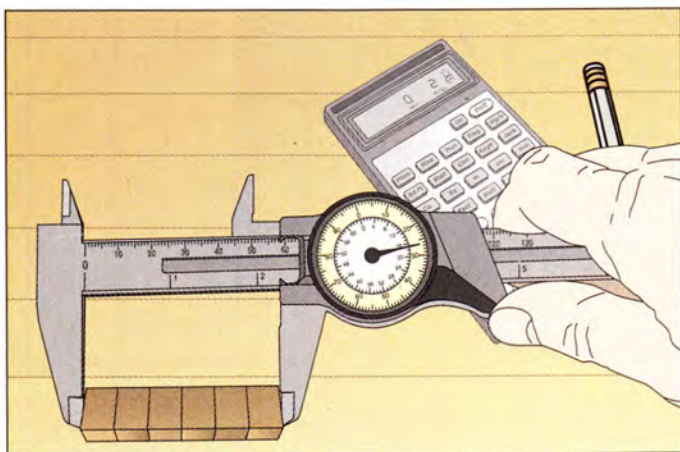
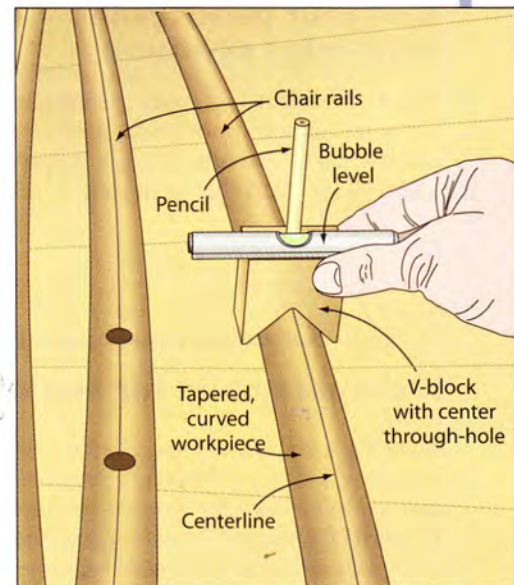


Find center on a tapered, curved rail

My chair plans called for turned, tapered, and steam-bent back rails, so I needed a way to find the centerlines to position the holes for the back spindles. This easy jig did the trick.

Drill a pencil-size hole through a $\frac{3}{4} \times 1\frac{1}{2} \times 1\frac{1}{2}$ " block, cut a V-shape notch into it, centering the notch in the block. Glue a small bubble level on one edge, and insert the pencil, as shown *below*. Working on a flat, level surface, with the pencil pressed to the rail, run the V-block along the rail while keeping the bubble centered. The resulting centerline follows the tapers, bends, and curves of the rail.

—Ted Sheroke, Medina, Ohio



Multiplication mitigates minute measuring mistake

When I made a piece of outdoor furniture that featured closely spaced slats, I ran into trouble spacing out the slats. A tiny error in the width of my spacers, multiplied by each piece, threw the layout way off. Because the margin of error was so small, it made it hard to measure precisely, so I turned the power of multiplication back against the problem. Aligning six of the spacers together edge-to-edge made the error easy to measure with my calipers. Then I divided the accumulated error by 6 and resized the spacers to compensate for the error. Now the slats fit perfectly.

—Erv Roberts, Des Moines, Iowa

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Raised-Panel Jig

With this one tablesaw jig, you can build popular-style door panels for your next cabinet project.

Raised panels have long been a sign of fine craftsmanship—perhaps because they appear difficult to make. One thing that makes them seem tricky is providing proper support while cutting each panel. Another is cutting bevels—a feature typical of several popular panel styles—evenly along the sides of each panel's front face. But not to worry; with our raised-panel jig you can turn out professional-looking panels with ease, one after another. All you need is some scrap material and a few hardware items and you'll have a jig that will deliver a lifetime of service.

Start with the Basics

1 Cut two pieces of $\frac{3}{4}$ " MDF to the dimensions in the **Materials List** to make the upright (A) and base (B). Scrollsaw or bandsaw the $1\frac{1}{2}$ " radii on the two corners of (B), cutting outside the line. Then sand to the line.

2 Using your dado blade, cut two $\frac{3}{4}$ " dados $\frac{1}{4}$ " deep in the top of the base, where shown on **Drawing 1**.

3 After adding an auxiliary fence to your tablesaw rip fence, cut a rabbet $\frac{3}{4}$ " wide and $\frac{1}{4}$ " deep along the bottom edge of the upright (A), where shown on **Drawing 1**.

4 Next, drill $\frac{1}{16}$ " holes in the upright (A) and at the ends of the slot locations in the base. Lay out the sides of the slots, and scrollsaw them to shape with a #12 blade. Cut two braces (C), as dimensioned on **Drawing 2**.

5 Drill $\frac{5}{32}$ " pilot holes, and then glue and screw the jig together using #8x $1\frac{1}{2}$ " brass screws, where shown.

Tip: Use brass screws anytime your jig's screw holes are close to the saw blade.

Now add the extras

1 Cut the guide strip (D) to fit your miter-gauge slot in depth and width. Trim to 28" long, and drill countersunk $\frac{1}{4}$ " holes centered on the strip 3" from each end. Attach the guide strip to the base using the hardware shown.

2 Cut the upright stops (E) to size, and drill the hole and counterbore hole, where shown on **Drawing 2**. Secure the stops to the ends of upright (A).

3 Cut the clamping bar (F) to size, and $\frac{5}{16}$ " drill holes where shown. Lay out and shape the clamping bar curve, as shown on **Drawing 1**, using a bandsaw. Sand smooth.

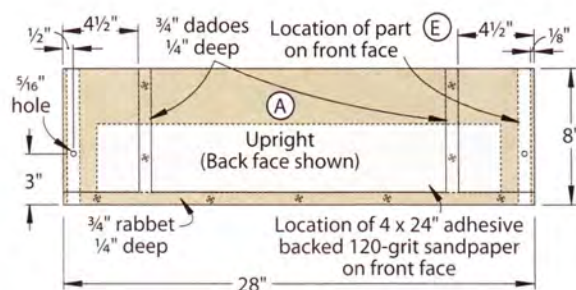
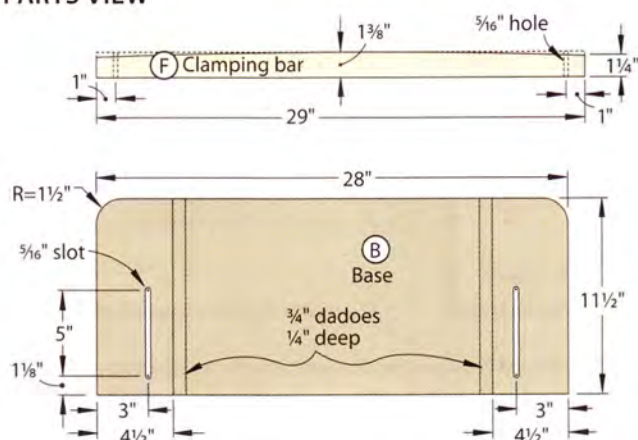
4 Next, attach the clamping bar to the jig using the hardware shown. **Tip:** If you have trouble finding extra-long machine screws, cut two pieces of all-thread. Then secure the four-arm knobs to the screws using 5-minute epoxy.

5 Remove the hardware and the clamping bar and guide strip, and sand all parts to 150 grit. Now apply two coats of finish, sanding between coats with 180-grit abrasive.

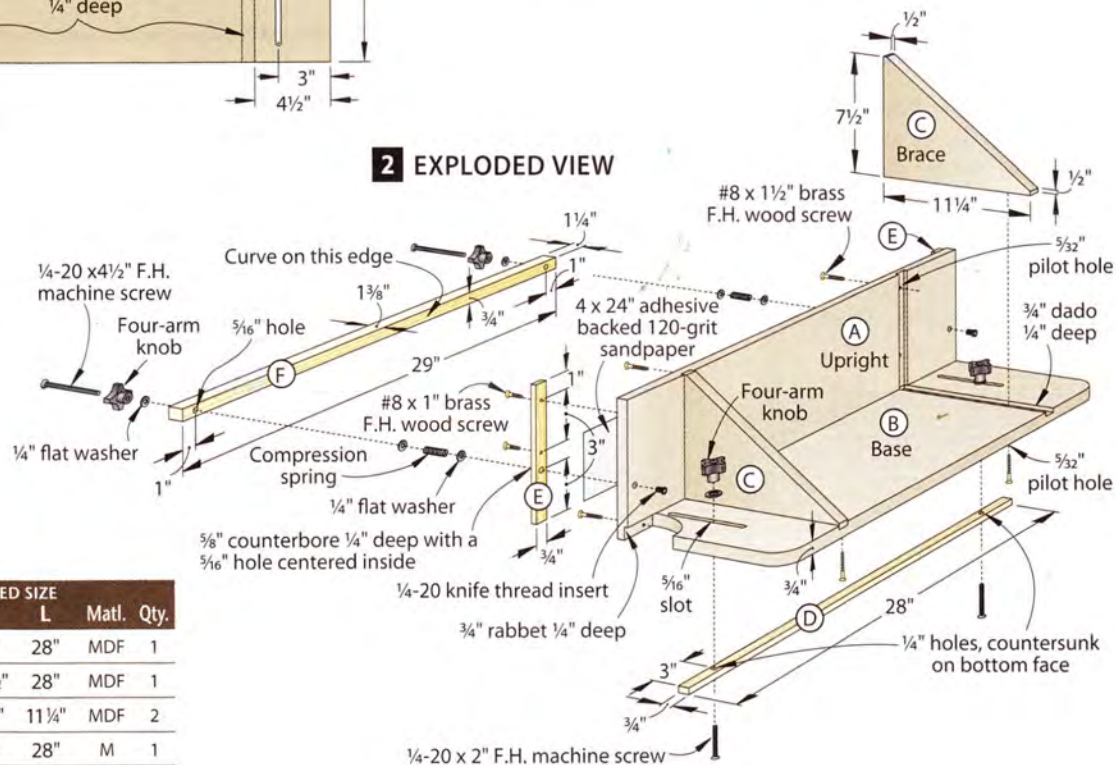
6 Cut a piece of adhesive-backed 120-grit sandpaper, and apply it to the jig face, as shown on **Drawing 1**. Then, reassemble the jig.

—from the **WOOD**® shop

1 PARTS VIEW



2 EXPLODED VIEW



Materials List

Part	FINISHED SIZE			Matl.	Qty.
	T	W	L		
A upright	3/4"	8"	28"	MDF	1
B base	3/4"	11 1/2"	28"	MDF	1
C braces	3/4"	7 1/2"	11 1/4"	MDF	2
D guide strip	3/8"	3/4"	28"	M	1
E upight stops	3/8"	3/4"	8"	M	2
F clamping bar	3/4"	1 3/8"	29"	M	1

Materials key: MDF—medium-density fiberboard. M—maple
Supplies: #8x1 1/2" brass flathead wood screws, 1/4-20x2" (2); 1/4-20x4 1/2" flathead machine screws (2); 1/4-20" four-arm knobs (4); 1/4" flat washers (8); 1 1/2x3/8" compression springs (2); 1/4-20 knife thread inserts (2); 4" adhesive-backed 120-grit sandpaper.

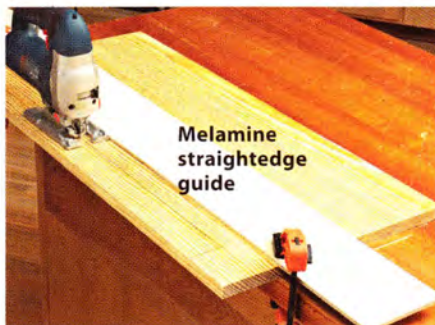
Sources: Four-arm plastic knob no. OOM55.30. Call Lee Valley at 800-871-8158 or go to leevalley.com.

Yes, you can get clean, straight cuts with portable power tools

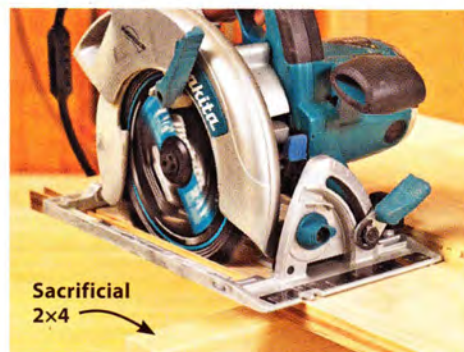
Been frustrated by poor-quality cuts using your portable power tools? Following these pointers will ensure wander-free machining and reduced tear-out.

- Clamp a straightedge to the workpiece as a guide for the tool. You don't need a fancy guide—the factory-cut edge of a piece of MDF or melamine panel works great, as shown *below*.
- Use sharp, clean blades and bits.
- Clamp a backer to the workpiece on the appropriate face to avoid chip-out.
- Use a slow feed rate, but be careful not to go too slowly or you'll burn the wood.

—from the **WOOD**® shop



Adjust blade depth to your stock thickness



For cutting and routing sheet goods, use sawhorses that can be topped with sacrificial 2x4s. If you're using other types of sawhorses, attach replaceable 2x4 tops with fasteners placed well clear of the saw blade. Set the blade or bit to cut no more than $\frac{3}{16}$ " into the sacrificial 2x4s.

—from the **WOOD** shop

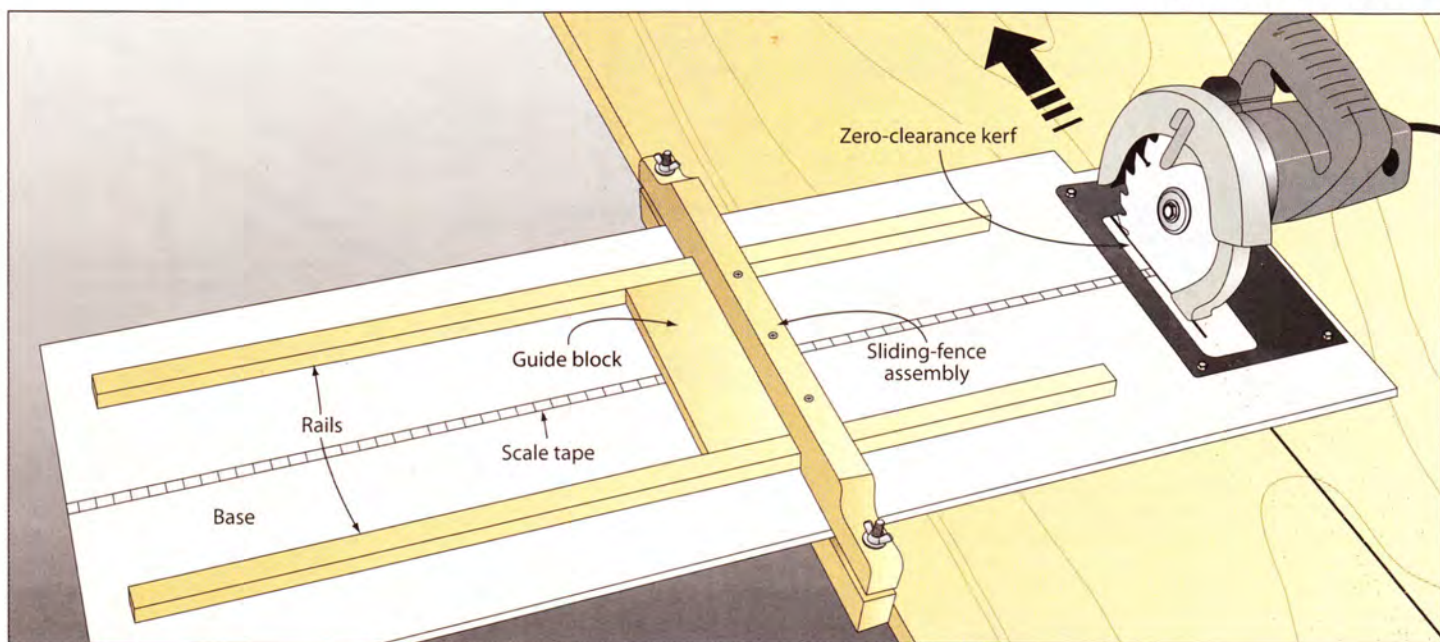
Edge guide allows you to rip large pieces with ease

This sliding edge guide works so well for breaking down sheet goods that I dedicated a circular saw to it. I made the base from $\frac{1}{4}$ ×12×30" melamine for minimal sliding friction. When making yours, be sure to secure the rails parallel to the edges of the base, and mount the circular saw perpendicular to the rails.

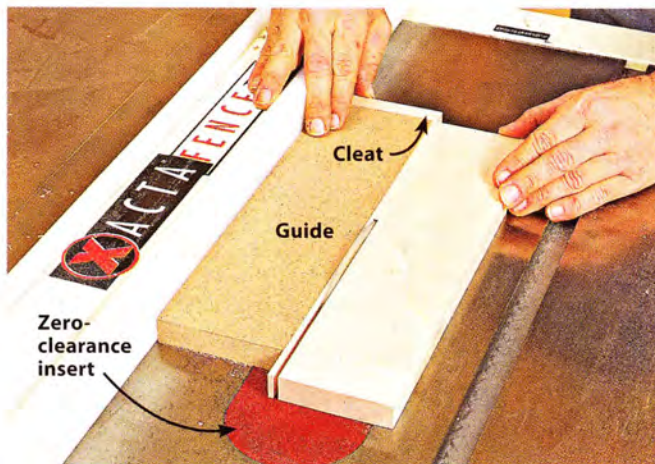
Then plunge the saw through the base to create a zero-clearance kerf. Remove the saw, then adhere the scale tape to the base—with the zero mark at the kerf's edge. Make the guide block to fit snugly between the rails to keep the sliding-fence assembly parallel to the blade.

Upper and lower fences joined by bolts and locked tight by wing nuts make up the sliding-fence assembly. Notch the upper fence to fit over the rails and guide block. Finally, resecure the circular saw to the guide. The point where the upper fence crosses the scale tape will show the precise width of your rip cut.

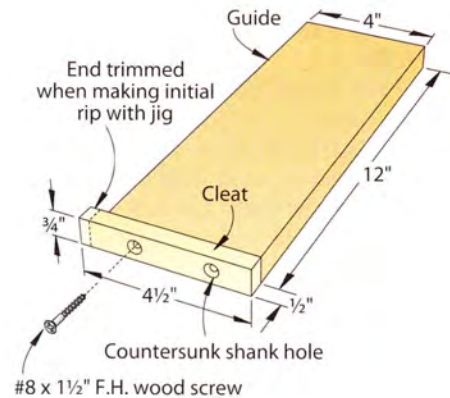
—Gerry Blacklock, Spruce Grove, Alta.



A simple guide makes it safe and easy to rip thin strips



Ripping thin strips with your tablesaw fence positioned close to the blade is a no-no. At the end of the cut, the strip trapped between the spinning blade and fence can become a dangerous projectile. To safely rip the strips, build the simple guide shown from $\frac{3}{4}$ " scrap. (For the #8 screws used to attach the cleat, drill countersunk $\frac{5}{32}$ " shank holes with $\frac{3}{32}$ " pilot holes.) Do not glue the cleat to the guide—that way you can replace the cleat when needed. The cleat ensures that the strips clear the blade at the end of each cut.



To use the guide, mark the desired strip thickness on the end of the workpiece. Place the guide against your fence and the workpiece tightly against the guide and cleat. Then position the fence, aligning the inside of the blade teeth with the mark on the workpiece. Now rip the strips, as shown in the photo, repositioning the workpiece tightly against the guide for successive cuts. Note that you'll cut through the cleat with the first cut, creating a zero-clearance backer. To rip strips with a greater thickness, replace the cleat to ensure proper support.

—from the **WOOD**® shop

Sneak up on cuts

Mitersaw blades can flex during tough cuts in hardwoods, but you can prevent this by making your cuts in two steps. First, make an initial cut about $\frac{1}{16}$ " to the waste side of your cutline. Then, cut to the line. The finishing cut, about half as wide as normal, will be cleaner and spot-on square.

—from the **WOOD** shop



After removing the cutoff, nudge your workpiece closer to the blade until the teeth line up with the mark, and make the final cut.

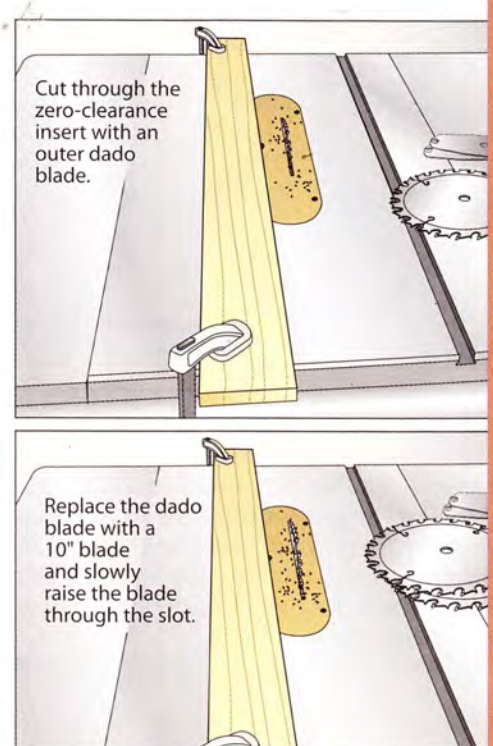
Remove the fear factor when making inserts

The tricky part of cutting the slot in a zero-clearance tablesaw throat insert is raising a spinning 10" blade through the uncut insert. Even when fully retracted, 10" blades don't allow for a proper seating of the insert before you cut the slot. Here's a strategy for making this type of cut easier and safer.

First, install one of the outer blades from your dado set on your tablesaw. (Because of its smaller circumference, this blade allows the insert to seat properly, and the blade doesn't have to work as hard to cut through the insert.)

Next, clamp a scrap board over the new insert, where shown *above right*, and raise the spinning dado blade through the insert to its maximum height. Finally, replace the dado blade with your 10" blade and repeat the procedure.

—Chris Penkala, Seattle



When a hole is not a hole

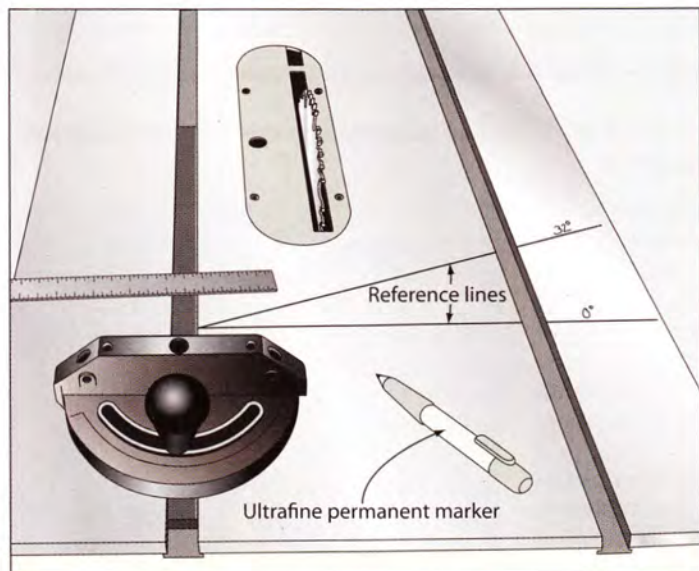
The best way to create a deep hole, such as the cord hole in a lamp base, and keep it true is to forget about the drill. Turn instead to your tablesaw or router table.

If you're cutting the lamp base from solid stock, cut your base blank to its final dimension, plus about $\frac{3}{16}$ " extra width to account for your blade's kerf. Joint or sand it to clean up the faces. Then rip the base in half at your tablesaw. Otherwise, if you're laminating a blank from multiple layers, build up two half-thicknesses, but don't glue the two halves together, yet. Use a dado blade to cut a centered groove in the inside faces of the lampbase halves, as shown. Alternatively, if you absolutely need a round hole, you can use a core-box bit at your router table. Then simply glue and clamp the two halves together.

—Michael Kelly, Summit, N.J.



On-saw reference lines speed resetting



Recently, I had a project that involved making repetitive precise cuts at identical angles and dimensions. Interrupting the project for other cuts meant readjusting the saw and miter gauge to the previous, precise dimensions—a hassle, to say the least. To prevent future headaches, I marked the settings directly on the tablesaw top with an ultrafine felt marker. When the project was finished, the marks cleaned up easily with denatured alcohol.

—Bill Wells, Olympia, Wash.

Rip thin stock safely with a zero-clearance tabletop



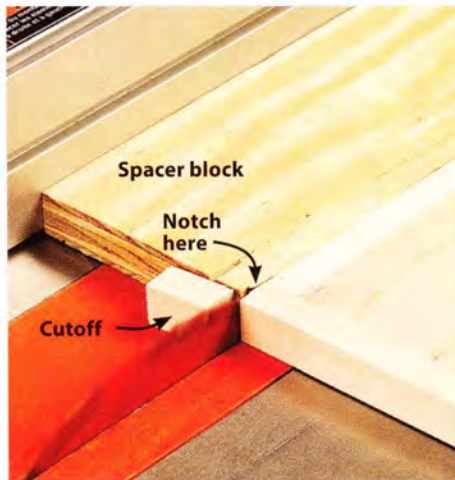
You'll cut thin stock with less tear-out on a saw with a zero-clearance insert. But there's an easier way to get the same results while raising the workpiece enough to keep it from sliding under the fence. This tip also works great for cutting thin sheet brass.

First, cut a piece of $\frac{1}{4}$ " medium-density fiberboard or hardboard large enough to cover the saw table from front to back and wide enough to support your workpiece. Position the fence for the cut, and lower the blade beneath the tabletop. Then double-face-tape the hardboard to the saw table with one edge against the fence.

Start the saw and gradually raise the blade through the zero-clearance top to the correct height. Always use pushsticks to control stock narrower than 2".

—from the WOOD® shop

Give solid edge bands that clean-cut look



Trimming solid-wood edge bands on plywood shelves can leave handsaw scratches, or rounded edges from sanding. Instead, make a spacer block with parallel edges. Then, set your tablesaw fence to remove just a whisker more than the blade width from the end of one edge.

Without moving the fence, lay the spacer block between the fence and a piece of test scrap. Push both a couple of inches into the blade. If the scrap touches the blade, move the fence a bit closer to the blade, and make a second test cut. Once the scrap clears the blade, place your shelf edge against the spacer block, as shown *above*, and push both just far enough into the blade to remove the edge banding.

—from the **WOOD®** shop

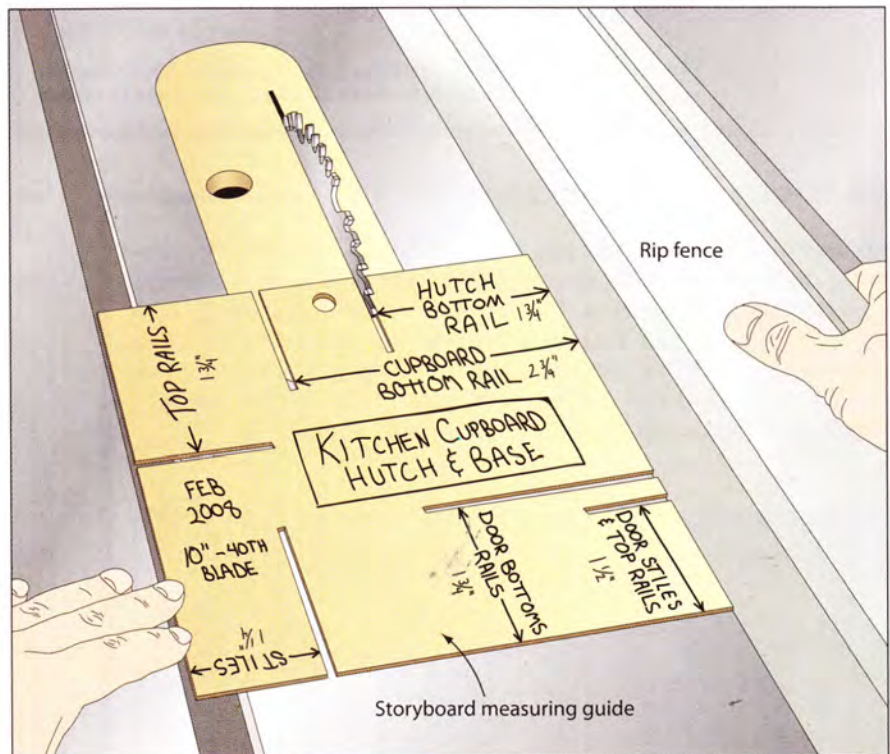
Simple storyboard makes fence setup a snap

A story stick is a great way to set up your tablesaw fence accurately without measuring every time. But sometimes, measurements too near each other can be hard to mark and read reliably. My solution: Create a storyboard out of a scrap of $\frac{1}{8}$ " hardboard. For every fence setup, after I cut my workpieces, I make a short cut on the storyboard, and write in the measurement and the name of the part. That way, if I forget to cut a piece or have to make

a recut, it is simple to capture the blade in the storyboard and slide the fence into place against the storyboard shown *below*.

To make the storyboard even more reliable, I record information on it such as the date, the blade used, even the name of the project. I store all of my storyboards on a nail on a rafter for those times when my friends and family ask, "Can you make me one just like it?"

—Serge Duclos, Delson, Que.

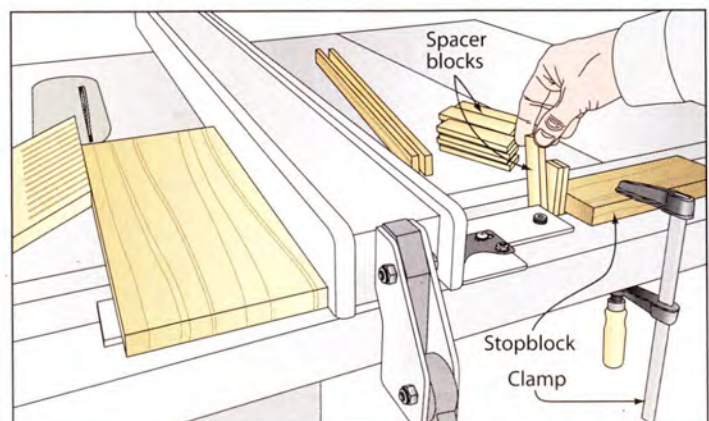


Spacers calibrate thin-strip cutting

I've developed a safe way to quickly cut thin strips of equal thickness on a tablesaw. First, plane a piece of scrap that equals the thickness of the strips you need plus the thickness of the saw-blade kerf. Cut the scrap piece into short blocks and position the fence so the board you're ripping just grazes the inside edge of the saw blade.

Next, attach a stopblock to your fence rail with a clamp so the block touches the fence's rail bracket. Finally, loosen the fence and add a spacer between the stopblock and fence, as shown. Install your featherboard and make the first rip. Each added spacer will correctly position the fence for the next rip—no measuring required.

—Robert Wilde, Welling, Alta.



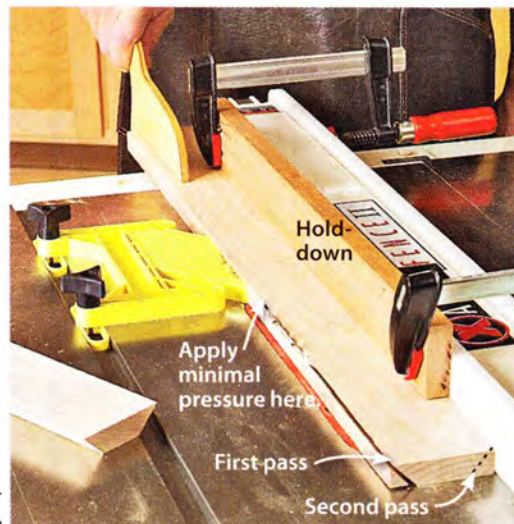
Set up your saw for bevels

A number of variables come into play when you're ripping bevels that need to mate perfectly. If you're having trouble making a set of bevels align top to bottom, rule out the most obvious causes first. Check your saw alignment by first making the blade parallel with the table's miter slot. Then check the fence to ensure it's parallel with the miter slot, and therefore the blade. Use a drafting triangle (or sliding T-bevel for less common angles) to set the bevel angle of your blade; then lock the bevel handwheel in place. Cut test pieces from scrap to check for joint gaps, and fine-tune the angle. With your tablesaw in order, next make sure you've machined all stock flat, straight, and square.

For controlled bevel cuts, attach a hold-down to your fence, where shown at right. On each pass, use a featherboard to hold the stock snugly against the fence. On the second pass, the hold-down will help prevent the beveled edge from climbing up the side of the fence.

—from the *WOOD*® shop

To keep the workpiece from shifting as you cut, use both a featherboard on your saw table and a hold-down clamped to the fence.



Two-in-one insert for extended life

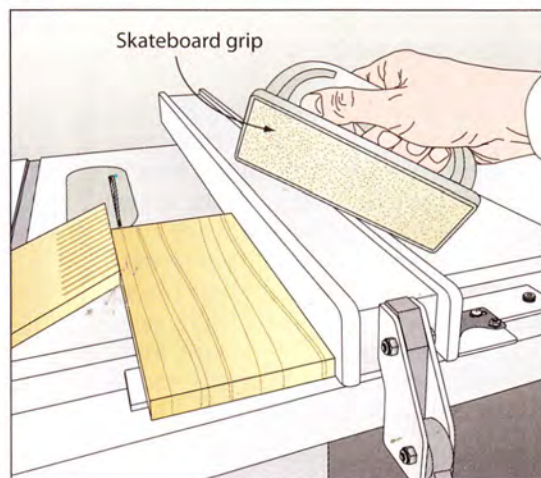
I use a zero-clearance insert for making nearly all tablesaw cuts, so I go through a lot of them. To extend the life of your inserts, simply rotate them. First use one side with your thin-kerf blade. When it gets chewed up enough

to start losing effectiveness, designate that slot as the full-kerf side or another thin-kerf, and turn the insert around. The fresh side becomes zero-clearance for the thin-kerf blade once again.

—Craig Richardson, Ottumwa, Iowa



Get a totally gnarly grip on your boards



Through my many years of reading *WOOD* magazine, I'm still amazed at the uncommon ideas used to solve common problems in the shop. I recently had one when I helped my son overhaul his skateboard.

Skateboard grip—the stuff 'boarders put on top to make non-slip surfaces—has an extremely strong self-adhesive backing with a grit-textured surface. I started using the grip on my pushblocks, miter saw fences, and other jigs and tools where I don't want wood to creep during machining. It's totally awesome!

The grip comes in sheets or rolls and a variety of styles. You can even use bright colors to make your shop a little more "rad." You'll find it at any decent skateboard shop and some sporting-goods stores.

—Robert Galbraith, Oshawa, Ont.



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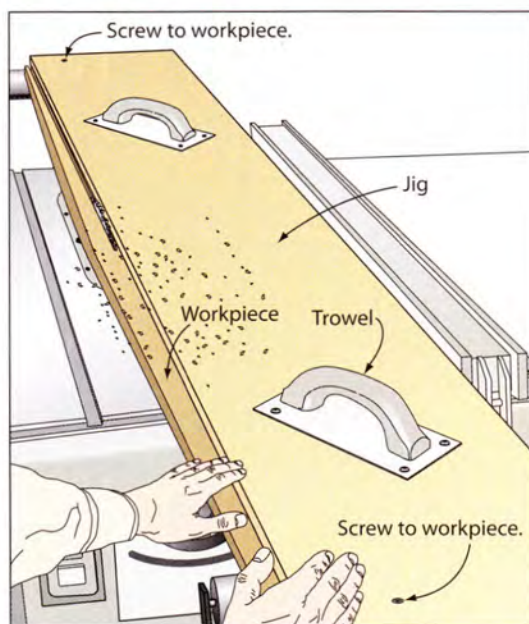


GO TO WWW.ROCKAUTO.COM ROCKAUTO, LLC (EST. 1999)

Quick and easy board straightener

I don't spend extra money to have a straight edge milled on stock because a long time ago I figured out a way to straighten virtually any board on my tablesaw as long as the board is fairly flat. All you need is a straight scrap of material you can screw to the workpiece, as shown. The straight scrap rides against the fence allowing a straight cut on the opposite edge. With one straight edge in place, you only need to remove the straight scrap, turn the board around, and cut the other edge parallel. The attached trowels help me hoist large workpieces up to tabletop height.

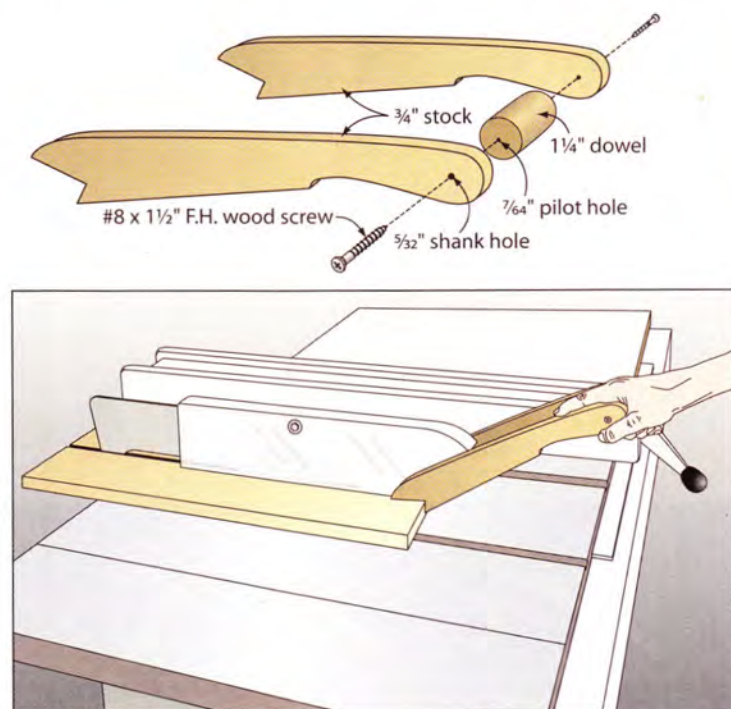
—Niki Avrahami, Garwolin, Poland



Twice the pushstick, twice the control

I feel safer performing tablesaw rip cuts with this double pushstick that I came up with—two pushsticks connected with a 1 1/4" dowel that's longer than the width of the blade guard. It allows me to cut narrower pieces without getting my fingers close to either side of the spinning blade. Plus, it straddles my blade guard, giving me one more incentive to leave the guard on the saw.

—Ken Peters, Spring Hill, Fla.

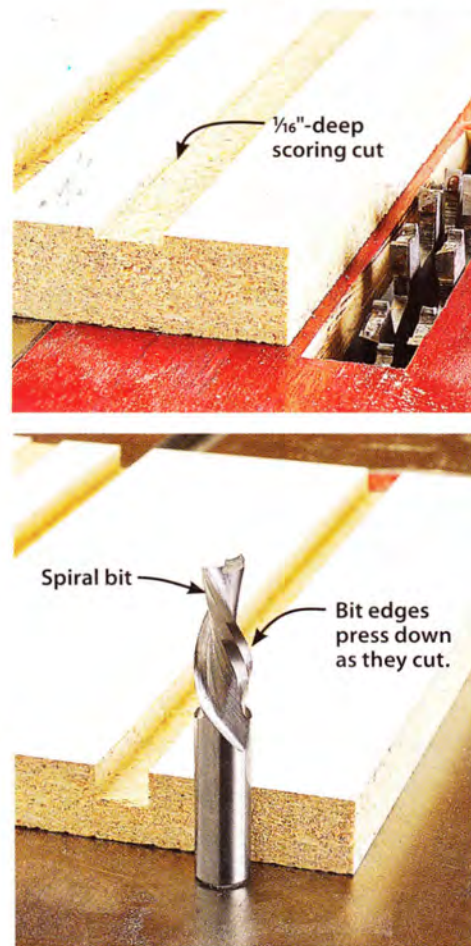


Cutting clean in melamine

When cutting dadoes in melamine, it's best to go with your tablesaw instead of a router. When sharp, a dado set cuts clean, chip-free dadoes in melamine-covered particleboard. For the best results, first make a 1/16"-deep scoring cut, as shown below, to remove the melamine layer and a small amount of substrate without producing tear-out. Then set the blade to your finished dado depth and complete the cut.

If you're still more comfortable routing dadoes, use a down-cut spiral bit instead of a straight bit and, to avoid burned bits, make two or more shallow passes instead of one deep cut. The spiral cutting action compresses the melamine against the particleboard as it cuts, resulting in less chip-out. A down-cut bit like the one at bottom doesn't clear chips as effectively as a straight-cut bit, but particleboard chips are easily cleaned out of a dado cut.

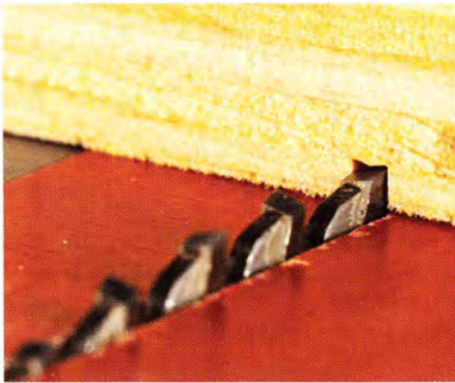
—from the WOOD® shop



Scoring cut skips the chips

If both faces of a veneer plywood will be visible on your project, minimize chip-out on each side by dividing the cut. First make a shallow scoring cut $\frac{1}{16}$ " to $\frac{1}{8}$ " deep, as shown *below*. This allows the teeth to bite at a shallower angle, which reduces chip-out. Then raise the blade, and make another pass to cut completely through the workpiece.

—from the **WOOD®** shop



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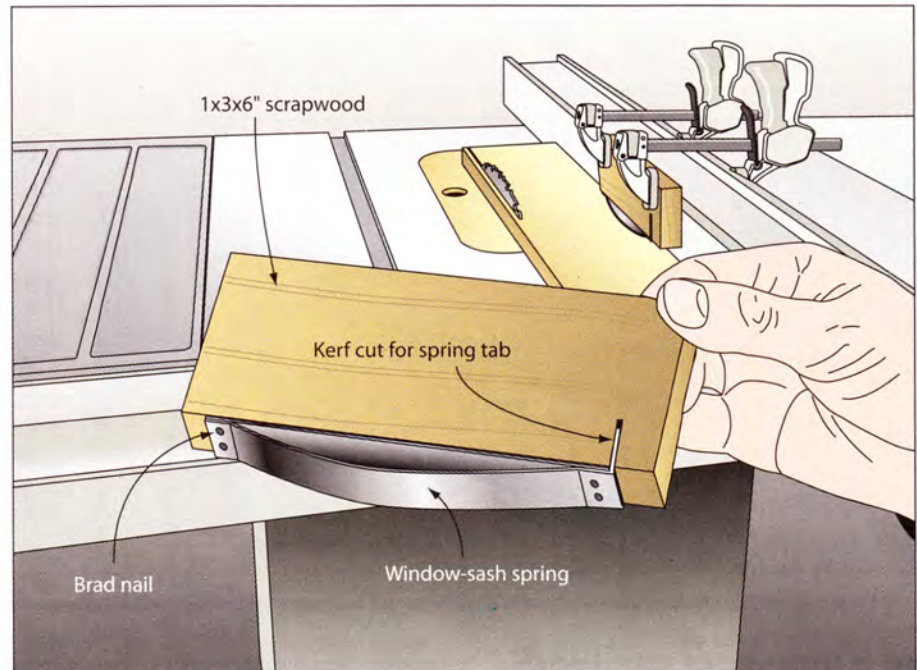


Spring-enhanced hold-downs

I use this jig in place of a featherboard hold-down on my tablesaw and router table because it's inexpensive and easy to make. To build one, you'll need an inexpensive window-sash spring. You can get them for about \$3/pair at a hardware store. Cut a small kerf in a

1×3×6" scrap of wood to accommodate the tab. Then attach the sash spring with brad nails. Clamped to your fence, the spring action holds the workpiece securely against the table during feeding.

—Dale Robbins, Stockton, Calif.

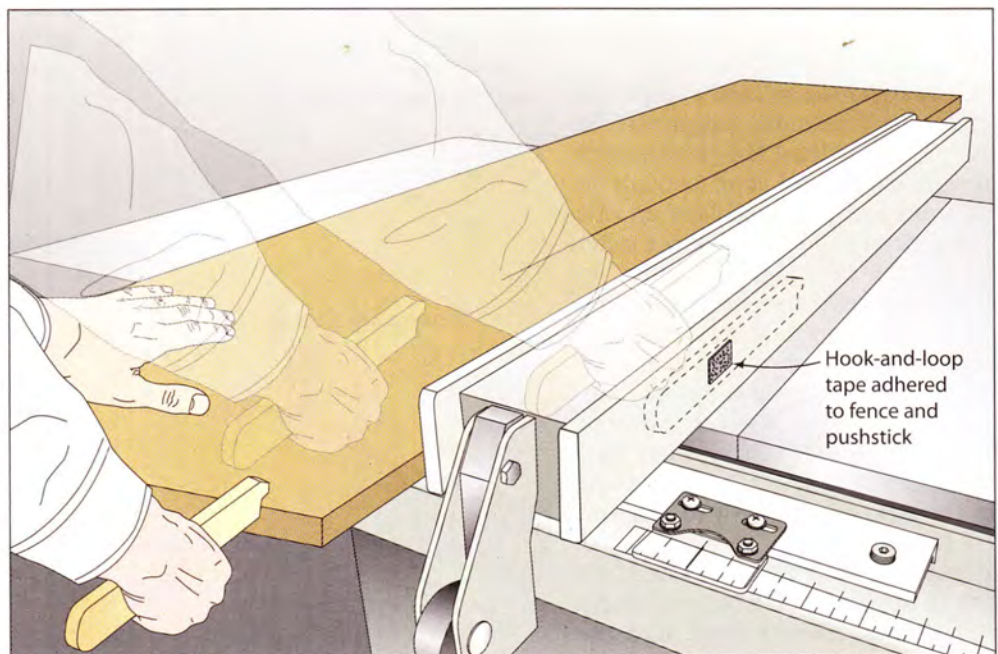


Make your pushsticks easy to find—and reach

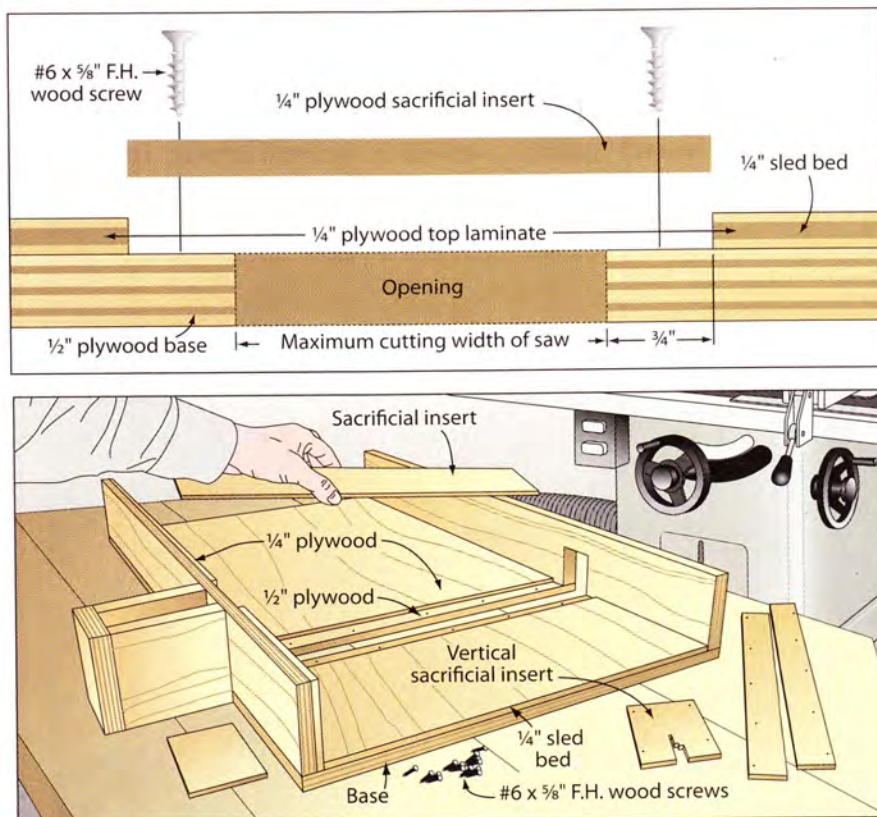
I keep a variety of pushsticks near the machines that require them. But looking for a pushstick is sometimes like hunting for deer—you always see them when you don't need one, but they seem to disappear when you do. Here's my solution.

Using heavy-duty self-adhesive hook-and-loop tape, I secured the pushsticks in easy-to-reach spots that won't interfere with the machine's operation.

—David Birch, Syracuse, Utah



Sacrificial insert saves sled's integrity



My table saw crosscut sled has been one of the most useful tools in my workshop. However, I've also found that, unless I use the same blade each time, the kerf widens and I can't rely on it anymore for chip-free cuts. And I can't make bevels or dado cuts without trashing the sled. My solution: replaceable inserts over both cutting areas of the saw.

To apply this idea in your shop, first determine the maximum cutting width of the saw from a 0° to 45° bevel cut with a full dado stack. Then, add a layer of 1/4" plywood to your sled bed, measuring 3/4" from each side of the cutting width to form a shoulder for the insert. Use the same technique to size and locate the vertical sacrificial insert for the rear fence. Attach the inserts with wood screws, keeping the screw heads below the surface of the insert so they won't accidentally scratch a workpiece.

You can now install different inserts for each blade, bevel angle, or dado size. When the insert no longer provides the needed zero clearance, simply replace it.

—Don Mullikin, St. Petersburg, Fla.

Add a long-part stopblock

A stopblock on your miter-gauge extension provides a simple, foolproof way to crosscut multiple parts to equal length without measuring each one. But what if you're cutting extra-long parts, such as table legs? In that case, clamp on a long-part stopblock like this one.

Start by attaching an MDF or plywood extension to your miter gauge. Make it at least 1" wider than the thickness of your workpieces and long enough to reach from just past the blade on one end to 6" or so past the end of the miter gauge on the other end. Mount it to your miter gauge, and cut a kerf that marks the blade position.

Subtract the length of the extension from the final length of the workpiece, and cut a strip of 3/4"-thick MDF or plywood about 10" longer than that distance. Next crosscut a 1 1/2"-long piece from the strip and screw it to one end where shown at right.

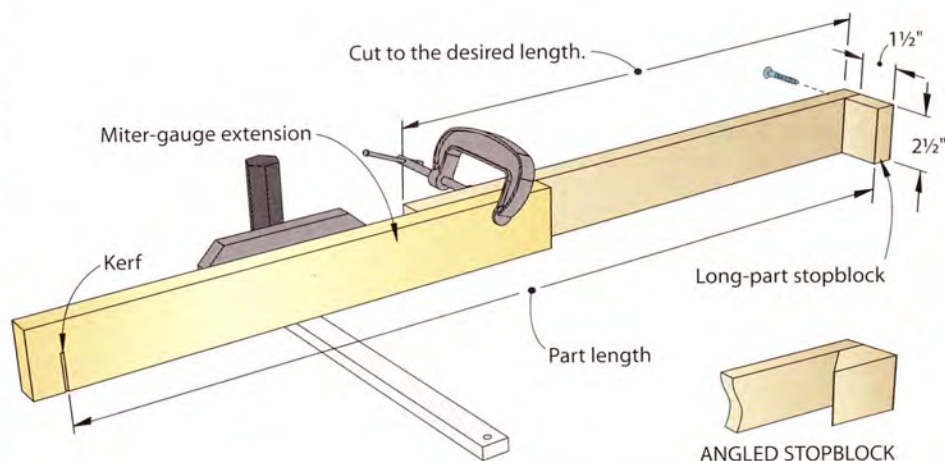
To use the stopblock, measure the length of the parts you'll cut and clamp it that distance from the kerf. Butt the

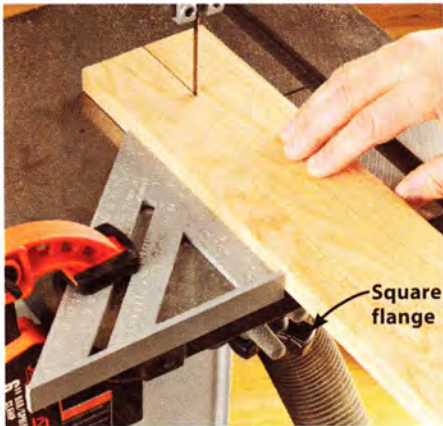
workpiece end against the stopblock (without bending the extension) and crosscut the part.

If the stopblock slips or wobbles, add a second clamp or adhere 100-grit sandpaper to the back side of the miter-gauge extension where it overlaps the long-part stopblock.

To cut parts with mitered ends, replace the stopblock with one that's mitered the same angle as your part. Completely capturing the mitered workpiece end adds dead-on repeatability to those cuts. Always check to make sure there's no sawdust between your workpiece and the stopblock.

—from the **WOOD®** shop





Square flange

Square makes a fast fence

If your bandsaw didn't come with a fence, substitute a Speed Square. With the square's flange against the front edge of the bandsaw table, clamp it in place where you want to begin your cut. These squares cost only a few dollars, and their thickness provides enough edge to guide workpieces lying flat.

—from the **WOOD** shop

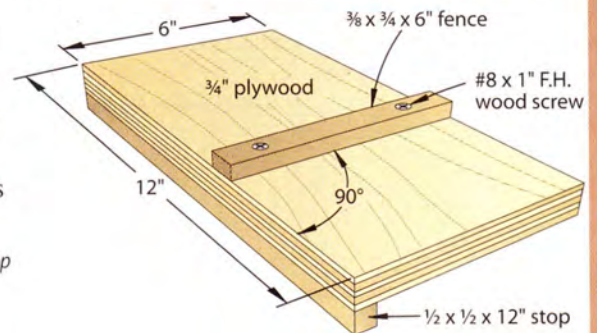
Make on-the-mark cuts with your circular saw

Fast to set up and highly accurate, this cutoff jig was designed for 6" boards. But you can increase the width for larger workpieces, or angle the fence and enlarge the jig to make 45° cuts.

To make one, measure the distance from the edge of the widest portion of your circular-saw base to the blade, add ¼", and mount the fence that dimension from one end of the base. Then, with your circular-saw base against the fence, cut the jig end to final length.

To use the jig, clamp it with the stop against the workpiece edge and the right end of the jig aligned with your cutline. Hold the saw-base edge against the fence as you cut, as shown above right.

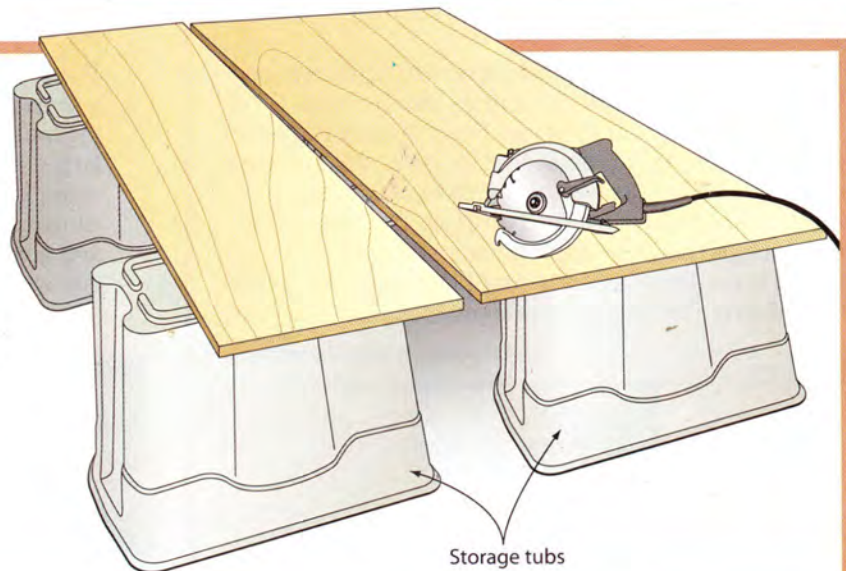
—from the **WOOD** shop



Tubs take a turn as handy sawhorses

After a recent move, I had a collection of cheap plastic storage tubs left over. I was about to toss them when I realized they would make great substitute sawhorses. They're easier to use—and store—than rigid foam sheets on the shop floor for cutting sheet goods, and like the foam, they won't harm the blade. They also work well as finishing stands. Glue, paint, and finish scrape off easily. I haven't dragged out my heavy steel and wood sawhorses since I started using the tubs.

—Greg Pfeiffer, Colorado Springs, Colo.

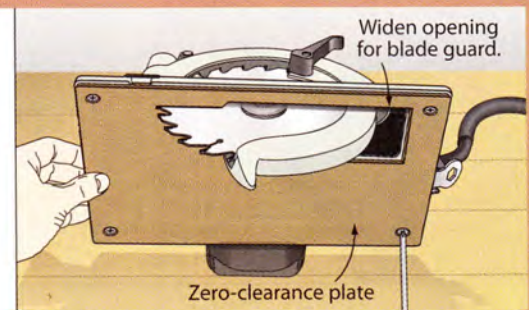


Storage tubs

Let your guard down for circ-saw safety

I added a ½" hardboard auxiliary zero-clearance plate to my circular saw to improve the cut quality, but I didn't like that the retracted guard left the blade exposed. Then I realized that the workpiece only needs zero-clearance support where the blade teeth exit the workpiece at the front of the cut. So I used a jigsaw to widen the back two-thirds of the blade opening to allow room for the blade guard to snap back into place, just as it was made to do.

—Rob Price, Watkinsville, Ga.



Widen opening for blade guard.

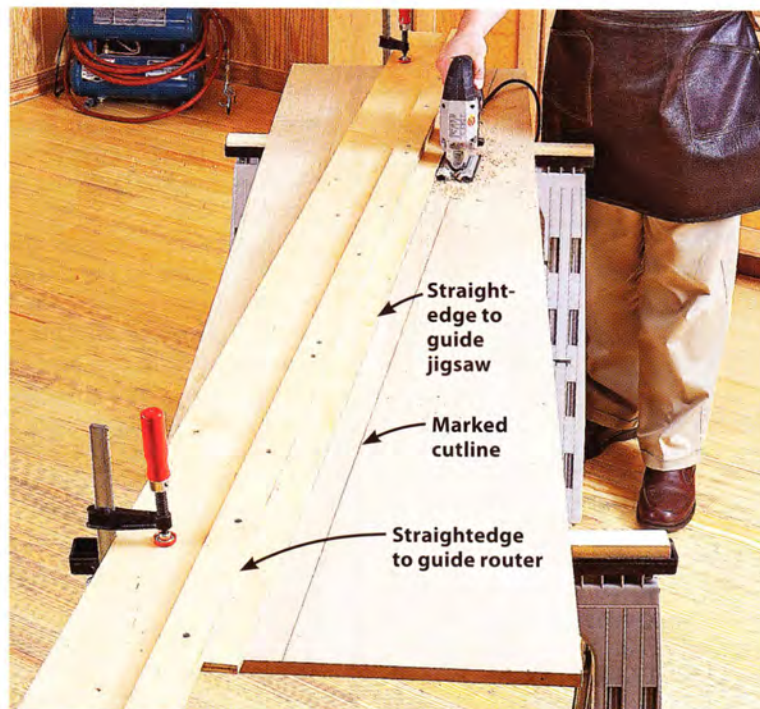
Zero-clearance plate

A new angle on sawing panels

Try this strategy for making clean, consistent, and repeatable angled cuts. On one panel with the appearance side down, mark a line precisely where you want your final cut. Using a straightedge and a circular saw or jigsaw with a plywood-cutting blade, cut to within $\frac{1}{8}$ " of the line on the waste side, as shown at *right*. Then reposition your straightedge, and use a router with a top-bearing straight bit to trim the panel to your marked line. This piece now becomes the template for the remaining parts.

Place this first piece atop other panels—again with the appearance side down—and mark lines about $\frac{1}{8}$ " from the angled edge. Then rough-cut the panels to these lines. Instead of a straightedge, though, use the template piece atop the remaining pieces to guide your top-bearing straight bit and trim the rough edges to their final dimensions.

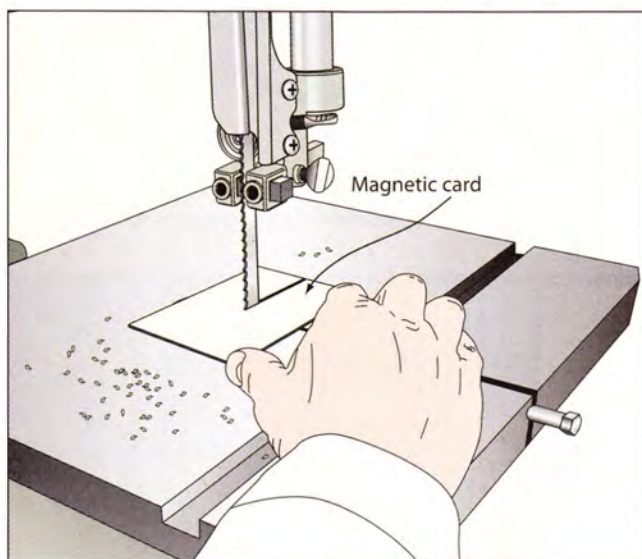
—Jeff Johnston, Rio Rancho, N.M.



Zero clearance with a magnetic personality

Those flexible refrigerator magnets that businesses constantly hand out used to annoy me because I just couldn't bring myself to throw them away. And then I found a use for them. Because they cut easily and stick beautifully to steel or cast-iron tables, they make great zero-clearance plates for the bandsaw. The magnets are thin enough that they don't cause a problem with most cutting tasks. Even better, if your plate wears out, someone will give you another one soon enough.

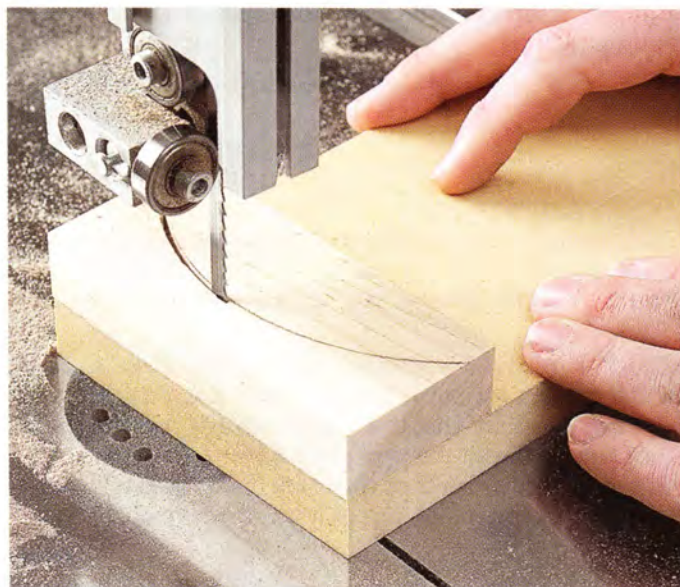
—Carl Bloedel, Brooklyn Center, Minn.



Bandsaw small project parts, preserve small body parts

Holding small parts steady while I bandsaw them poses a serious safety hazard. I give myself a margin of safety by double-face-taping the blank for my curved part to a larger scrap of plywood or MDF. I then hold the scrap-wood guide as I bandsaw the curved piece to shape, as shown. This keeps my fingers safely away from the blade and gives me much more control over the workpiece as I guide it through the blade.

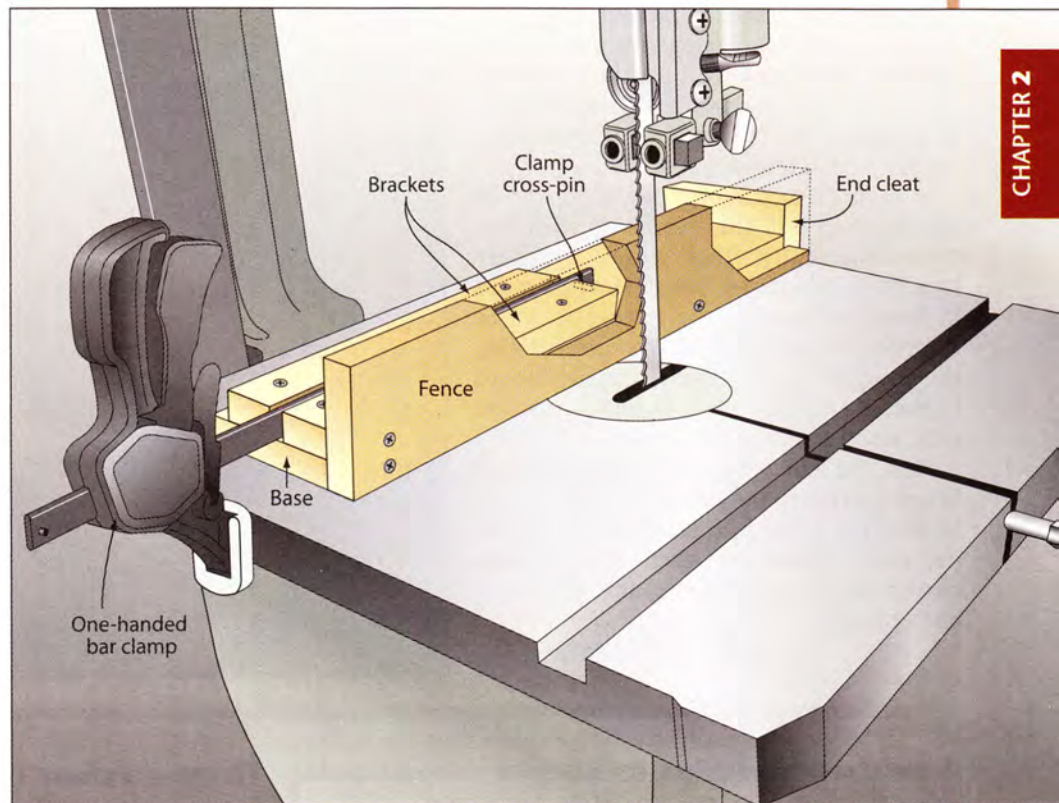
—Shirley Anderson, Rockford, Ill.



Cannibalized clamp makes a quick-release fence

After hunting for a rip fence small enough to fit my benchtop bandsaw, I came up with the quick-release one shown here. The simple L-shape scrap-wood fence has a cleat at the rear that drops over the back edge of the table. On the front end, a set of brackets houses the bar of a one-hand bar clamp. I removed the clamp's fixed jaw and dropped the bar between the brackets. The clamp's cross-pin pulls against the brackets when the sliding jaw presses against the table, tightening the fence in place.

—Vincent Durante, Huntsville, Texas

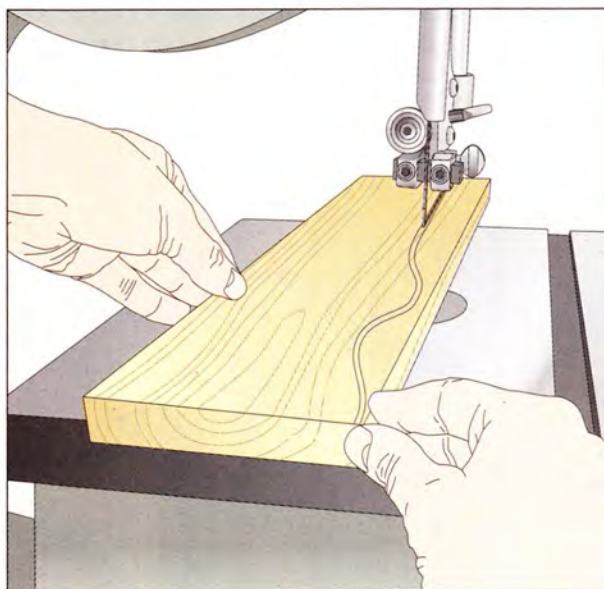


Two lines are better than one for cutting accurately

No matter how old or young, the first time we cut wood on the bandsaw, we learn to follow a single cutline, staying to one side of it. So it runs against our nature to accept that two parallel lines drawn on the workpiece are better than one. I'm not sure why shooting for the gap— $\frac{1}{16}$ " is plenty—between the lines is easier, but since I started using this technique, I rarely let the blade wander over the line as I saw. Ironically, by giving myself more room for error, I get even closer to the perfect curved cut. To create the two lines, I simply freehand a line parallel to the original

cutline. Go ahead and try it; I'll bet it'll work for you, too.

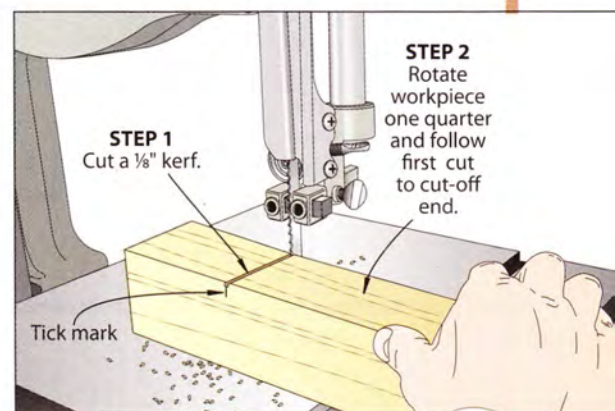
—Warren Perkins, Millington, Mich.



Cut to the chase

Here's a quick, accurate way to make a freehand squaring cut on your bandsaw, as you would for a turning blank. After making a tick mark to indicate the cutline, and with your bandsaw table set 90° to the blade, cut a shallow kerf at your tick mark. Then rotate the stock a quarter turn so the kerf is on top, and cut along the kerf—no drawing, no square, and no miter gauge.

—from the **WOOD**® shop



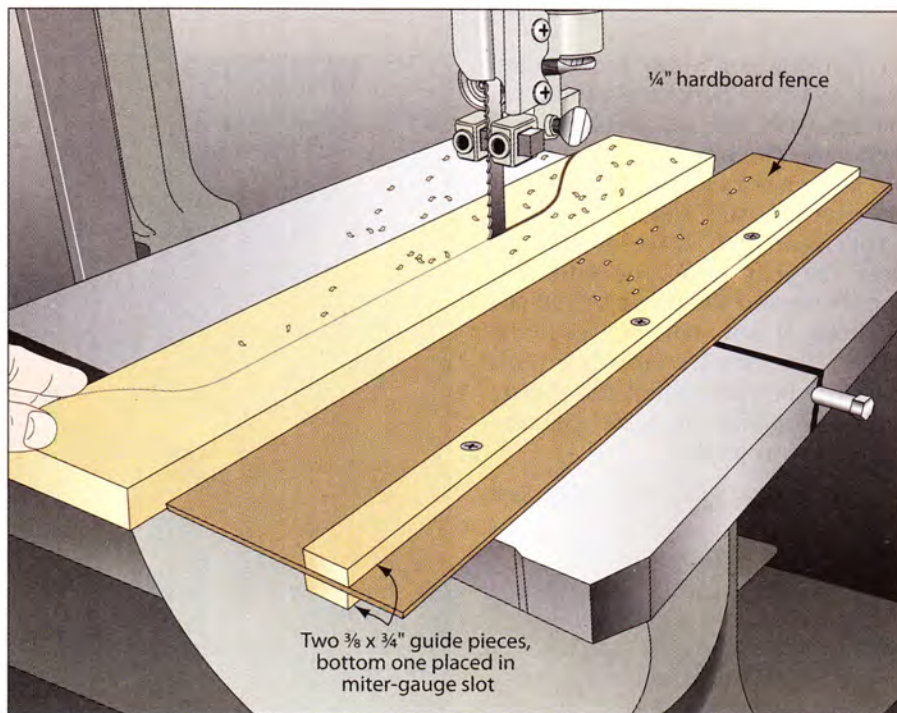
Quick cutting for curves and straightaways

A bed rail on a recent project called for curved ends with a long straight section in between. Normally, I would rough-cut curves on the bandsaw and sand them to final shape, but it's hard to freehand-cut the long straightaway precisely.

In order to make the straight portion of the cut truly straight, I came up with this removable guide that drops into my bandsaw's miter slot. Here's how to make it: Position a piece of hardboard to act as a fence for cutting the workpiece along the straight line. Sandwich the hardboard between two pieces of $\frac{3}{8} \times \frac{3}{4}$ " hardwood with wood screws, as shown.

Start the cut with the curved section. When you get to the straight section, pause to drop the guide into place, and continue the cut. When you reach the opposite curved end, remove the guide and complete the cut.

—Jeff Stikeleather, Mill Spring, N.C.



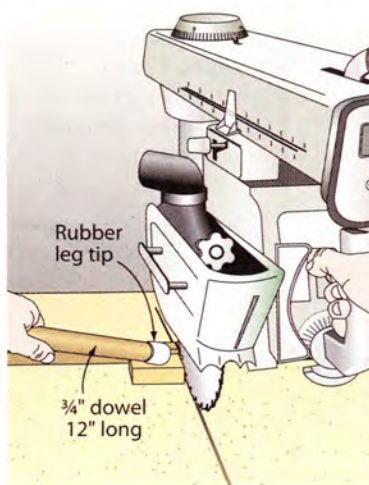
A rubber tip helps to keep a woodworker's fingertips intact

I once saw a woodworker use the eraser end of a pencil as a hold-down to keep his fingers away from a rotating blade. Most of my pencils are too short or missing their erasers, and the pencil seems a bit fragile for some workpieces.

So, I beefed up the concept with a set of rubber leg tips from the hardware store. They fit perfectly on $\frac{3}{4}$ " dowels—a lot stronger than pencils. For comfort, I rounded over one end of the dowel, and then slipped the rubber leg tip over the other end.

I now keep several "finger savers" stashed around the shop: with my pushstick at the tablesaw, and others at the radial-arm saw, mitersaw, and bandsaw.

—Serge Duclos, Delson, Que.

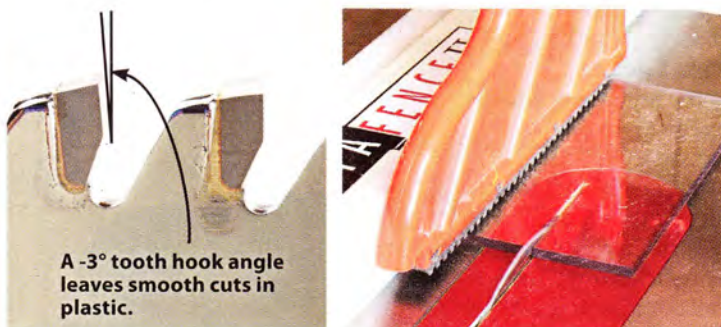


There's a clear choice for cutting plastics

For cutting large amounts of acrylic, go with a plastic-cutting specialty blade. These include 80-tooth, 10" blades, such as the Freud no. LU94M010 shown *below left* (\$112.70; 800-334-4107 or freudtools.com), the the Infinity Cutting Tools Multi Material (\$79.90; 877-872-2487 or infinitytools.com), and the Forrest No-Melt (\$220; 800-733-7111 or forrestblades.com).

The teeth on plastic-cutting blades have a negative hook angle and beveled sides that cut cooler and smoother. On the other hand, tablesaw blades made for woodworking usually have a positive hook angle for an aggressive cut. However, that angle leaves a rough edge on plastic, and the sides of the teeth can rub against the plastic, creating enough heat to melt it. For best results with a plastic-cutting blade, set the height so that just half of the uppermost carbide tooth is above the acrylic, as shown *below right*.

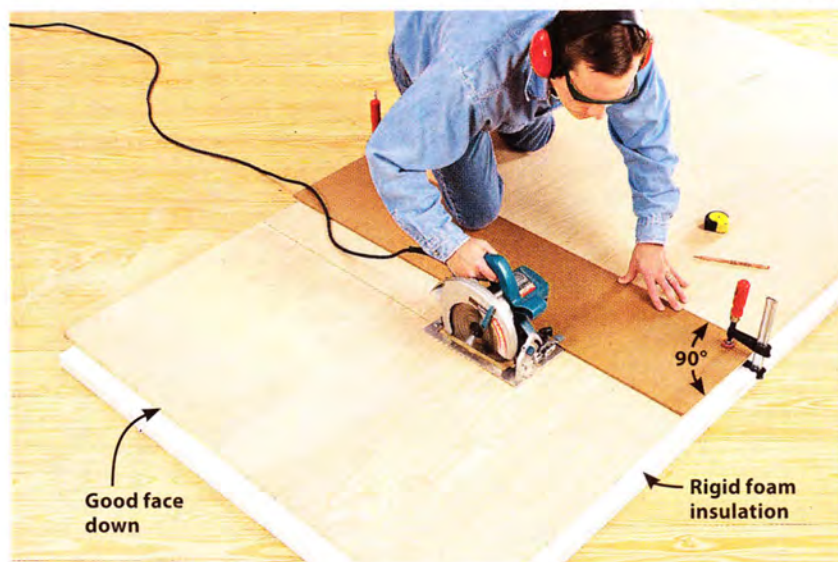
—Dick Webber, East Jordan, Mich.



Cut big panels down to size

Wrestling with 4x8' panels in a small shop can be a losing battle. Here's a way to cut them before taking them into your shop. First make a straightedge using the factory-cut edge of a 10"-wide scrap of plywood or medium-density fiberboard. Next lay the panel on a sheet of rigid foam insulation at least 1" thick. Measure from the saw-base edge to the blade, and clamp your straightedge that distance from the cutline. Clamp the guide in place; set the blade cutting depth to penetrate $\frac{1}{4}$ " into the foam insulation, and then make the cut, as shown *below*.

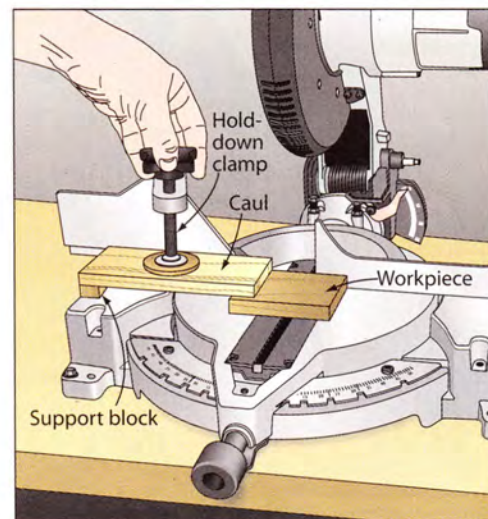
—from the **WOOD®** shop



Finger-saving hold-down extension

When I'm trimming the end off a short piece at my miter saw, often the saw's hold-down clamp won't reach the workpiece. To remedy this, I attach a short scrap the same thickness as the workpiece to a clamping caul long enough to bridge the gap, as shown. For added stability, I epoxied a 2" wood disk to the pad of the hold-down.

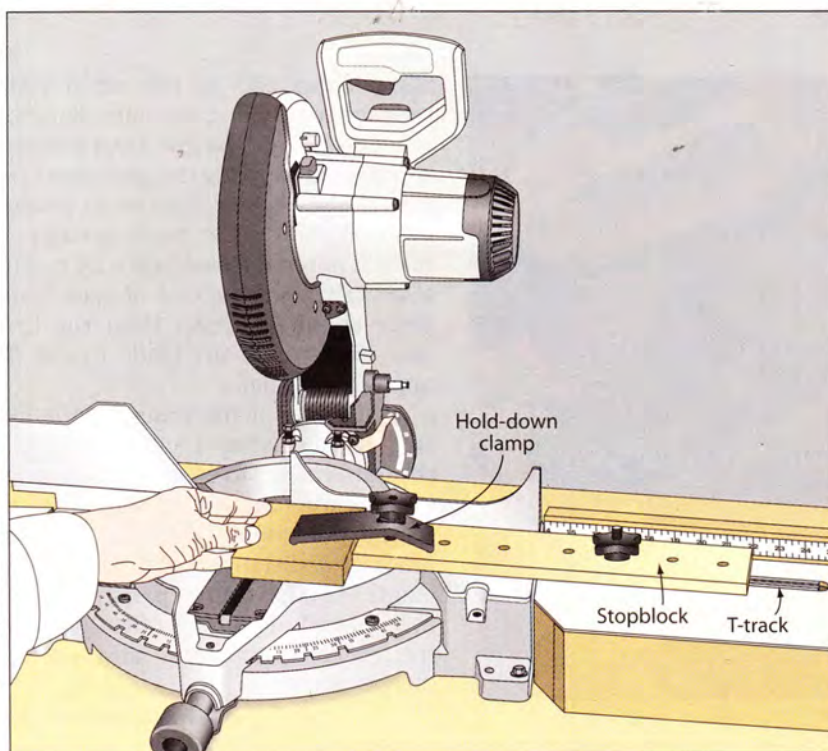
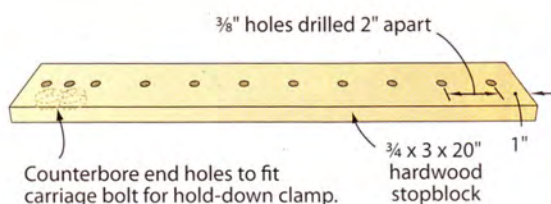
—Luis Padilla, Albuquerque, N.M.



Finger-saving hold-down for small workpieces

I came up with this adjustable hold-down to keep my fingers safely out of the way while cutting small pieces on the miter saw. First, I added a short section of T-track to both sides of my miter saw table. Then I made the simple stop-block, shown *below*. Because it is exactly 20" long, simply add 20" to the size of the workpiece being cut and put the end of the block at that mark on the fence scale. I drilled $\frac{3}{8}$ " holes every 2" so I can use the hold-down with longer workpieces. To secure the hold-down clamp, I counterbored the end holes to accept a carriage bolt and fastened it in place with a star knob.

—David Breen, Loudon, Tenn.



Straight and square is as easy as 3-4-5



A string or chalk line makes a ready reference for checking the straightness of a sheet of plywood.

If you're not sure the factory edges on your plywood panels are straight and square, do some quick double-checks. Sight along the edge to see any curves or wobbles from the manufacturing process. This will also reveal dinged edges or delaminating areas that might not be visible straight-on. You can also use these photos to check for a straight edge (*left*) and a square corner (*below*).

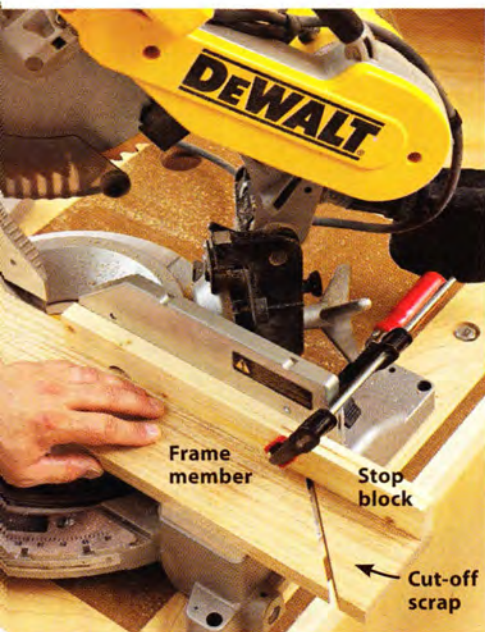
If you do find problems, your best straightener is your tablesaw. Cut your project pieces to $\frac{1}{8}$ " or more oversize with the factory edge against the tablesaw fence. Then cut them to final size with the newly ripped edge against the fence. Any irregularities in the factory edge of the plywood will be averaged out in the first cut, and then removed in the second.

—Jonathan Walters, Bryantsville, Ky.



If the diagonal measures 5' at the 3' mark of a 4' wide sheet of plywood, then the corner is square. Just remember: Not all plywood is exactly 4' wide.

Stopblocks ensure square frames



Slight errors add up fast when you're making multiple miter cuts. For optimum accuracy, first give your miter saw a tune-up. Following the manufacturer's instructions, adjust the saw to produce dead-on 45° cuts at both settings. To make a mitered frame begin by cutting a 45° miter on one end of each frame piece about 4" longer than the final size. Now rotate the blade to cut the opposite 45° angle.

Attach one of the miter cutoffs to a 1x2" piece of scrap roughly as long as the frame pieces to create a combination stopblock/hold-down, as shown at *left*. Clamp the stopblock to the miter saw fence at a distance equal to the final length of the frame parts. Butt the mitered end of each part firmly against the mitered stopblock, and cut the second miter.

—Henry Long, Benbrook, Texas

Add teeth to your circ saw

Most people buy circular saws for remodeling and construction work, not to make clean, splinter-free cuts for woodworking. If your circular saw produces too much tear-out, replace the original 24-tooth blade with a 40-tooth carbide-tipped after-market blade.

—from the WOOD® shop



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Routing



Router-Table Push Pad

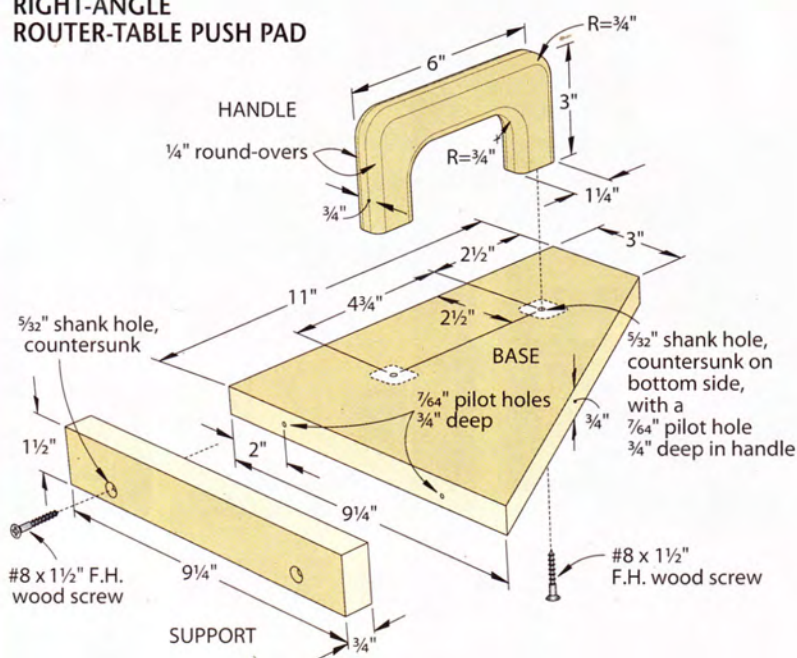
Keeping a steady grip while routing the end of a narrow workpiece can be tricky—and hazardous. This simple guide keeps stock perfectly square to the router fence. It also supports the back edge of the routed stock to minimize tear-out. Plus, it keeps your hands safely away from the spinning bit.

To build it, cut the pieces to the sizes and shapes noted on the drawing. Cut several extra supports so you can replace them as the inside end gets routed away. For a comfortable grip, rout the edges of the handle with $\frac{1}{4}$ " round-overs.

Screw, but do not glue, the support to the base. Secure the handle to the base. Sufficiently countersink the screws securing the handle to the base so they don't scratch or catch on the top of your router table.

—from the **WOOD**® shop

RIGHT-ANGLE ROUTER-TABLE PUSH PAD



Save time by pattern-routing duplicate parts

Jigsawing and sanding duplicate parts to size gets the job done—eventually. Using a pattern bit, *right*, in a handheld router, however, you'll get perfectly matched parts in less time.

First cut and sand one part to shape to serve as your template. Rough-cut duplicate parts within $\frac{1}{16}$ " of the pattern lines. Center the sanded part on a rough-cut part, and clamp or double-face-tape the two together on pieces of scrap that lift both above your workbench.

Install a $\frac{1}{2}$ " pattern bit in your router and adjust its depth so the bearing

rides against the sanded part and the cutter extends just beyond the full thickness of the rough-cut part below.

Rout in a clockwise motion around the pattern. To avoid tear-out on the end grain, grip the router firmly and "climb-cut" by moving the router the opposite direction. To decide where to climb-cut, practice routing curves on scraps.

—from the **WOOD**® shop



Start your router-bit collection with these essentials

Your router-bit investment can add up fast, but it pays to buy top quality when purchasing bits you'll use frequently. Whenever possible, buy bits with sturdy $\frac{1}{2}$ " shanks. Here's what to include in a starter set:

- ❶ $\frac{1}{8}$ " round-over with a bottom bearing. (It's mounted at the end opposite the shank.)
- ❷ $\frac{1}{2}$ "-diameter pattern bit with a 1"-long cutting length and a top-mounted bearing.
- ❸ $\frac{1}{4}$ " round-over with a bottom bearing.
- ❹ $\frac{1}{2}$ "-diameter straight bit with a 1"-long cutting length. Once you step up to a router table, you'll want a similar bit but with a bottom bearing.
- ❺ 45° chamfer bit with a bottom bearing.
- ❻ Rabbeting-bit kit with different-size guide bearings to adjust the depth of cut.

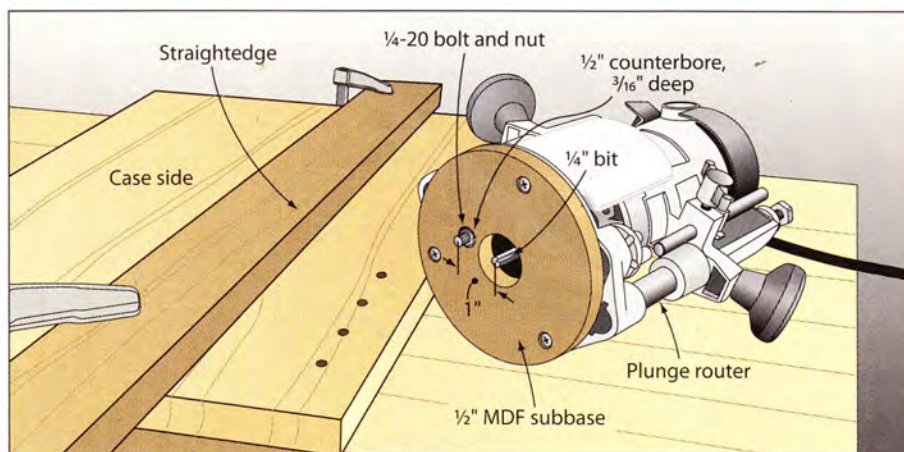
—from the **WOOD** shop



Simple subbase spaces shelf holes equally

Many shelf-pin hole jigs consist of a long board with a line of holes drilled into them: sometimes costly to buy, often time-consuming to make, and always a pain to store. But this router subbase solves all of those problems.

The shop-made subbase (I made mine out of $\frac{1}{2}$ " medium-density fiberboard) has a $\frac{1}{4}$ "-20 bolt that acts as an index pin. For shelf-pin holes 1" apart, drill a $\frac{1}{2}$ " counterbore $\frac{3}{16}$ " deep on the face of the base, centered 1" from the center of the router collet; then drill a $\frac{1}{4}$ " hole completely through the subbase centered in the counterbore. Countersink the hole on the back of the subbase. Now, insert a $\frac{3}{4}$ " long $\frac{1}{4}$ "-20 flathead bolt, and secure it with a nut inserted in the counterbore. Mount the subbase to your router and install a $\frac{1}{4}$ " straight bit, set for a $\frac{1}{4}$ " plunge depth.



To use the jig, clamp a straightedge to the shelf side to position the bit the desired distance away from the edge of the case. With the base firmly against the straightedge, position the bolt against the end of the case side and plunge the first hole. Lift and slide the

router over, positioning the bolt in the first hole. Keeping the router firmly against the straightedge, plunge the second hole. Repeat the procedure, using each preceding hole to index the router for the next.

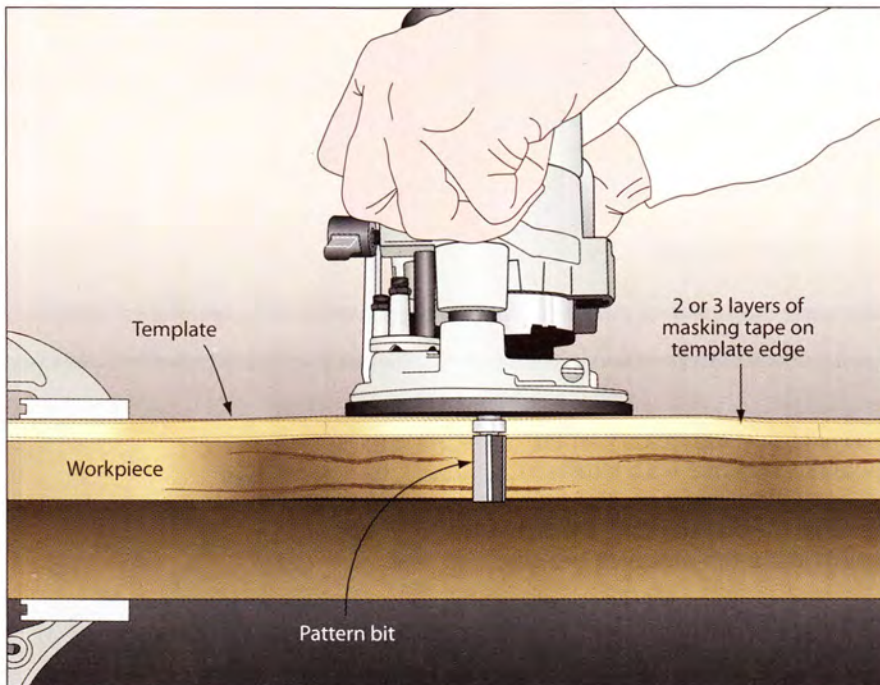
—Bas Pluim, Cary, N.C.

Unmasking a burn-free edge

Here's the method I use when template routing. After cutting close to the traced template line with the bandsaw, I apply two or three layers of masking tape to the edge of the template before

affixing it to the workpiece. After using a pattern bit to make an initial pass, I remove the tape and make a final shallow pass with the router, eliminating any burn marks.

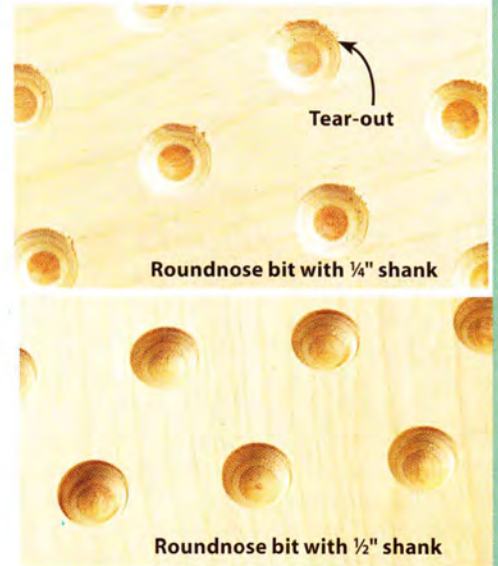
—Everette Blair, Seminole, Fla.



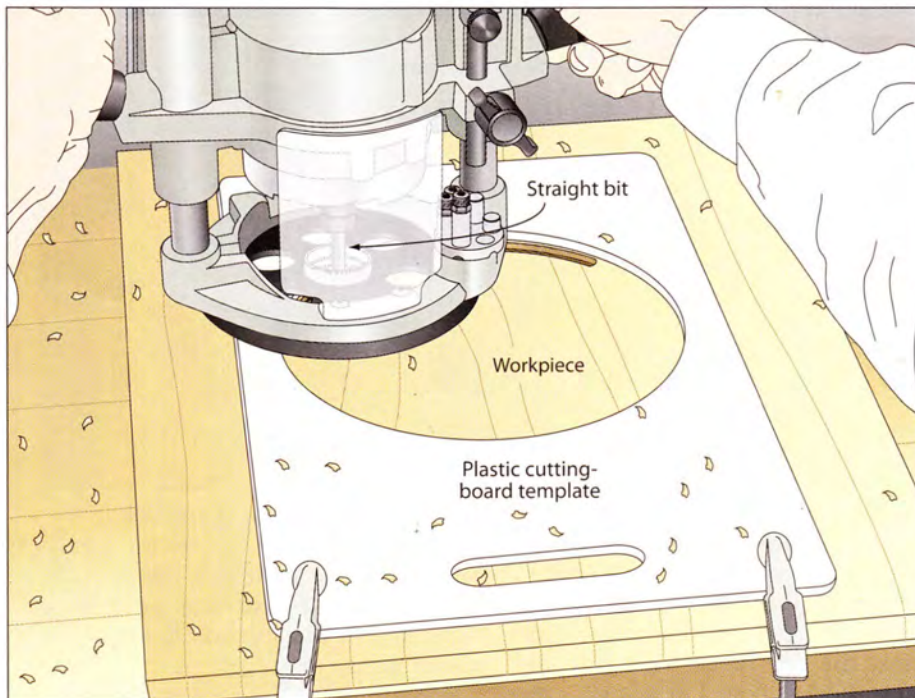
Step up to a 1/2" shank to rout cleaner recesses

Our first attempt at routing the marble recesses in a game board resulted in an unacceptable amount of tear-out, *below top*. After switching from a roundnose bit with a 1/4" shank to one with a 1/2" shank, the tear-out went away, *below bottom*. Why? Thicker shanks flex (and chatter) less during operation.

—from the **WOOD®** shop



From cutting board to template cutting



I found the perfect router template material in—where else?—my kitchen! Those polyethylene cutting boards make nearly indestructible templates for circle-cutting, butterfly keys, decorative inlay, or slot-cutting.

The plastic boards machine to shape easily using regular woodworking tools and blades. Then just clamp one to your workpiece and rout away. I've even used the cutting board's built-in handle to rout mortises or to make handles in projects and shop jigs.

The best feature of these cutting boards: their low cost. I find them for about a dollar apiece at discount stores.

—Serge Duclos, Delson, Que.

Slick solutions

Eliminate burn-causing hangups that prohibit a smooth feed rate on your tablesaw by applying a paste wax or commercial lubricant to the tablesaw top. Likewise, a coat of blade lubricant applied to your blades and bits reduces friction and burning.

—from the **WOOD** shop



How to safely rout along a narrow edge

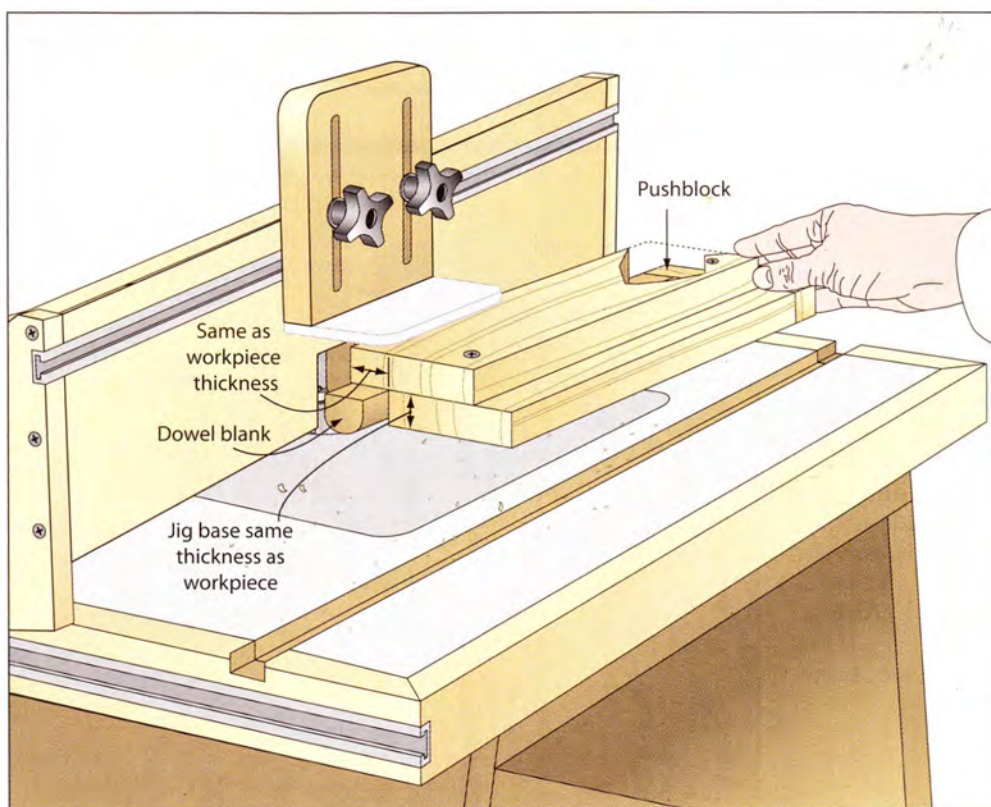


Here's a simple way to support your router when machining along the edge of a part, such as for rabbeting the edge of a cabinet to receive the back. Clamp a 1½"-wide scrap (a 2x2 works great) of the needed

length to the part, flush with the edge, as shown. The scrap provides sufficient bearing surface, so you can keep the router stable and make a straight cut.

—from the **WOOD** shop

Completely capture the blank for DIY dowels

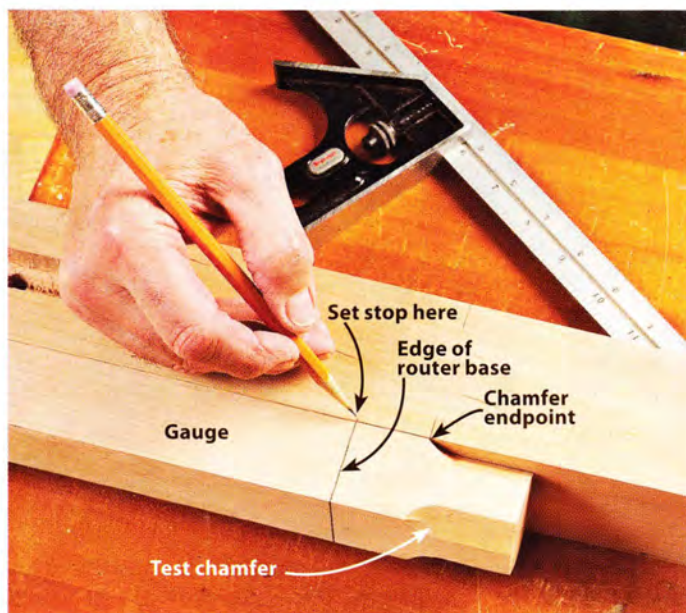


After reading an article in **WOOD** magazine about making your own dowels, I decided to share the simple jig I came up with to make ¾" dowels for Boy Scout toolbox kits. (It could be adapted for different sizes of dowel as well.) The jig captures the dowel blank for complete control, while the pushblock keeps fingers out of the block.

To use the jig, choose a round-over bit with a radius half the thickness of your blank, place the fence flush with the bit's bearing, and set the bit height to create a perfect quarter-round. With the dowel blank in place as shown, guide it through the router bit with the jig against the fence. Rotate the blank one quarter turn with each pass and in no time, you'll have a custom dowel.

—Kevin Godshall, Wyalusing, Pa.

An easy way to cut stopped chamfers



A simple shop-made gauge helps you set stops for routed chamfers quickly and accurately. To make one, set up your router with a 45° piloted chamfer bit. Then, rout a chamfer 3" to 4" along the edge of a piece of scrapwood, marking the edge of the router base on the piece at your starting point. To set a stop with the gauge, place the end of the chamfer on your test piece against the endpoint of the chamfer on the workpiece. Transfer the router-edge mark to the workpiece; clamp the stop there.

—from the **WOOD**® shop

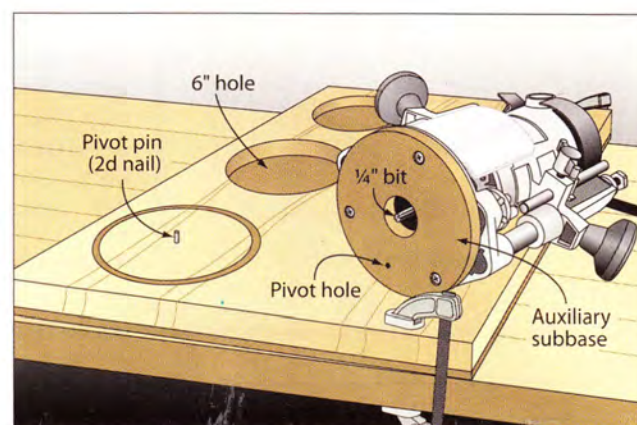
Mini trammel for mini circles

I recently completed a project that required several 6" holes. I quickly discovered the 3" radius was too small for most router trammels. Here's one solution you can use.

Lay out your circle using a compass, drill a $\frac{5}{16}$ " hole in the center, and fit a 2d nail in the hole. Make an auxiliary subbase for your plunge router out of $\frac{1}{2}$ " MDF, and drill a $\frac{5}{16}$ " pivot hole $2\frac{7}{8}$ " from the center of the bit hole (3" for the radius, minus the radius of a $\frac{1}{4}$ " straight bit). Install the subbase, and clamp the workpiece to your bench on top of a backer board. Fit the hole in the router base over the nail and rout the hole by plunging and swinging the router around the nail.

To make 6" discs rather than holes, change the distance of the pivot hole from the base center to $3\frac{1}{8}$ " (the distance of the 3" radius plus half the radius of the $\frac{1}{4}$ " straight bit).

—George Noeth, Fort Mill, S.C.

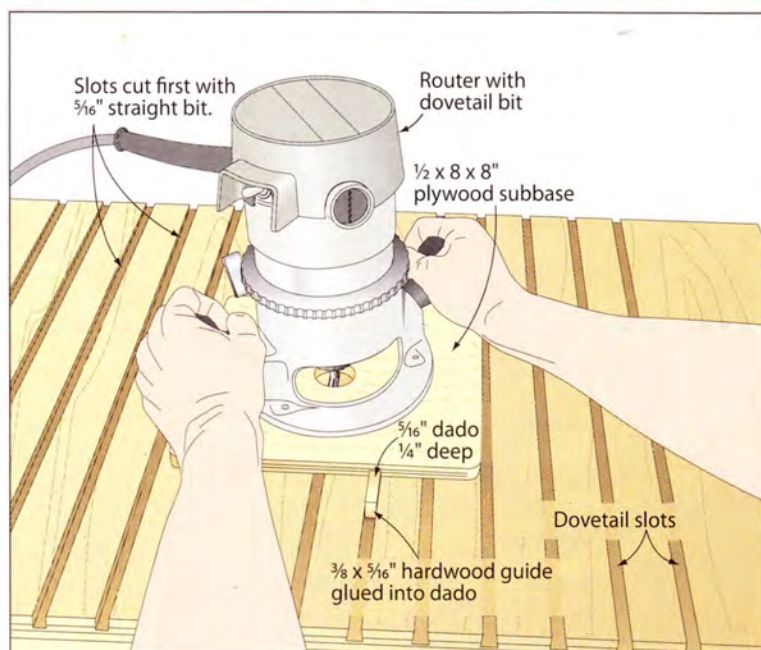


Parallel passes

Whether you're routing dovetail slots, as shown at right, or T-slotted wall-storage system panels, here's a timesaving jig for you. It indexes from the previously routed slot to ensure evenly spaced dados, dovetails, and grooves.

From scrap $\frac{1}{2}$ " plywood, cut a subbase to fit your router and project. Then, running your router along a straightedge, rout a dado on the subbase bottom where the distance between the dado and the bit equals the spacing between the slots. Make the dado as wide as the bit profile at the workpiece surface. Insert a matching hardwood guide in the dado. For grooves deeper than $\frac{1}{4}$ ", make progressively deeper cuts. For dovetails, rout first with a straight bit, and then finish with a dovetail bit for efficient chip removal.

—from the **WOOD** shop



Rout small parts safely



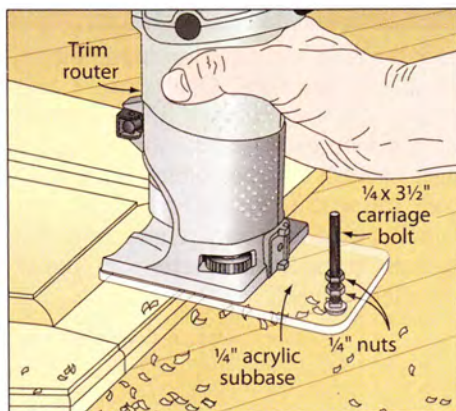
Double your safety precautions when routing small parts. In a $\frac{1}{4}$ "-thick sheet of plywood or MDF, drill a hole slightly larger than your router-bit diameter. Center the bit in the hole, and attach the plywood sheet to your router table with double-faced tape for a near-zero-clearance support. Then clamp parts between the jaws of a handscrew placed flat on the sheet to keep clear of the bit.

—from the **WOOD®** shop

Outrigger steadies your trim router

As a wheelchair-bound woodworker, I have to find novel ways to work efficiently in the shop. Holding a trim router steadily at arm's length was a challenge until I came up with the subbase you see here, made out of $\frac{1}{4}$ " clear acrylic. I added a $\frac{1}{4} \times 3\frac{1}{2}$ " carriage bolt that serves as a stabilizing outrigger. I double-faced-tape my workpiece down to a flat surface and adjust the height of the bolt, enabling me to rout it with no wobble at all.

—Edwin Frampton, Clarksboro, N.J.

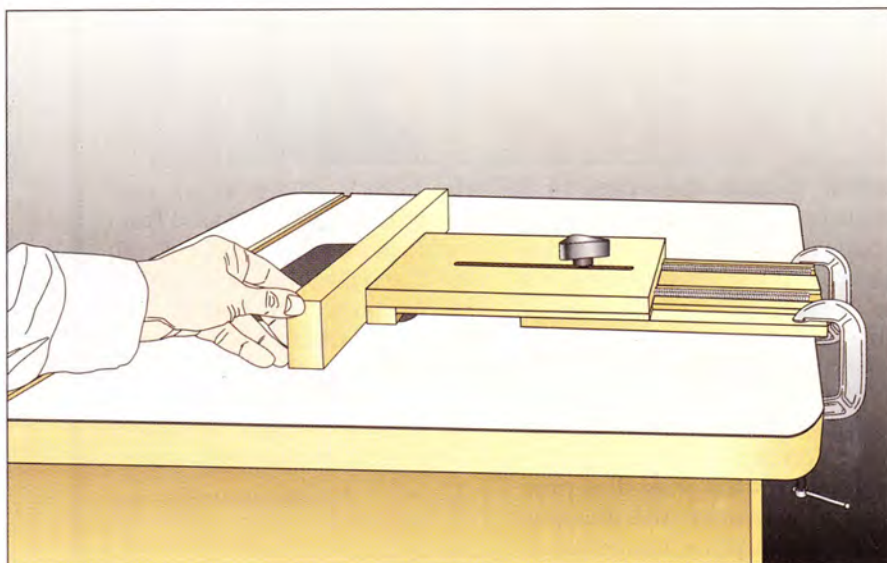
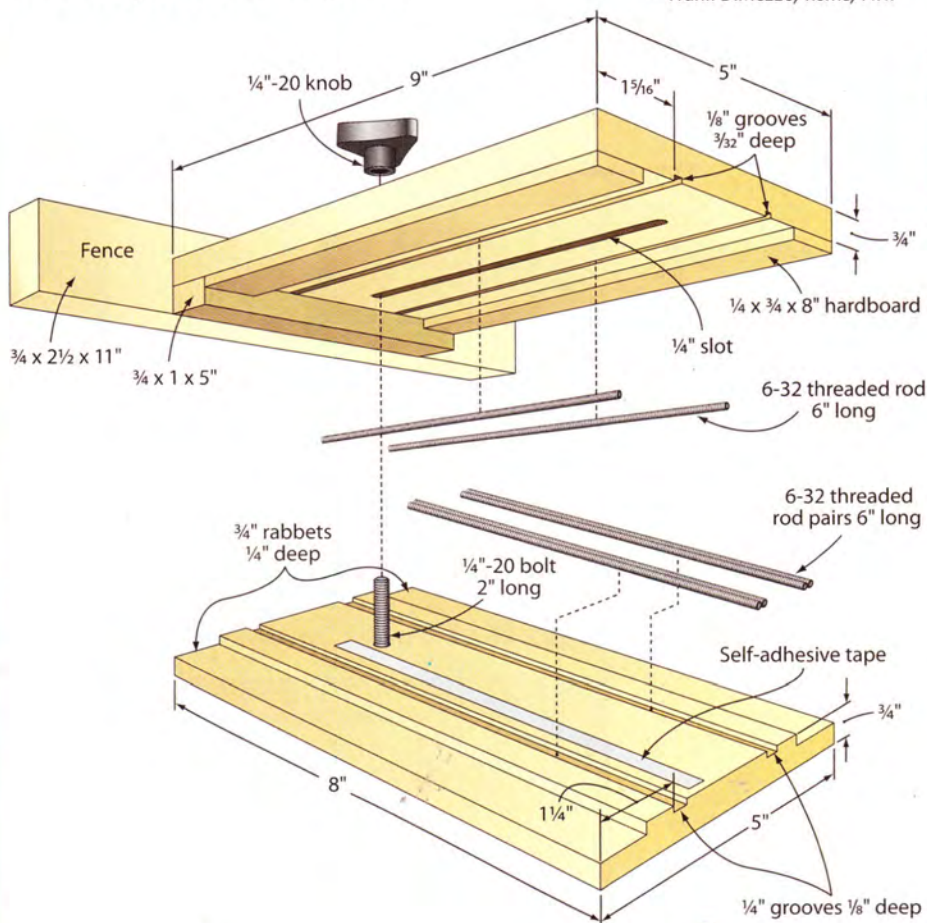


Eking precision out of threaded rod and scrap

Here's a shop-made version of a microadjustment jig to be used as a router-table fence. I made mine out of inexpensive MDF to the dimensions shown. The threaded rod, which is epoxied into the grooves,

has 32 threads per inch, allowing you to position the fence in precise $\frac{1}{32}$ " increments. The knob then locks it in place. To make minute adjustments, just unlock, move a step, and relock.

—Frank DiMezzo, Rome, N.Y.



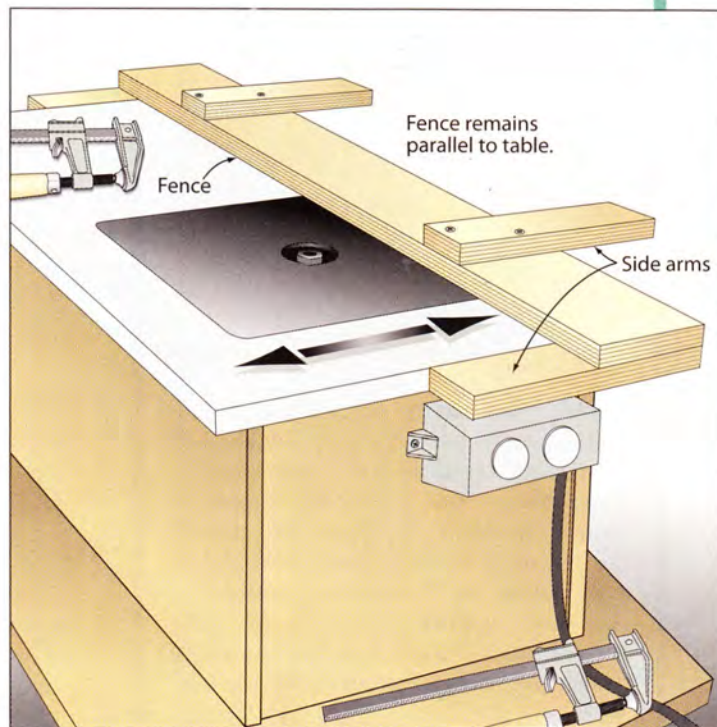
To improve the situation, make this two-way alternate fence that works with both the length and width of your table. Depending on the table size, you may be able to firmly position the fence up to 20" away from the bit. The side arms automatically align the fence with the table, and a pair of bar clamps hold the fence solidly in place.

Diagram illustrating the construction of a router table top. The main components are:

- Router-table top:** The central horizontal piece, labeled "Length of router-table top plus 4\"".
- Side arm:** The vertical piece on the right, labeled "Side arm".
- End piece:** The vertical piece on the left, labeled "Length of router-table top".

Dimensions and materials:

- Width of router-table top:** 2\".
- Length of router-table top:** 8\".
- Side arm width:** 4\".
- End piece width:** 2\".
- End piece length:** 8\".
- Fasteners:** #8 x 1 1/4\" F.H. woodscrew.
- Material:** All parts 3/4\" Baltic Birch plywood.



A diagram illustrating the correct router bit for a round-over. A yellow workpiece is being cut on a grey 'Router table'. A circular router bit is shown cutting a round-over into the workpiece. Red arrows indicate the cutting direction. Labels include: '1/4" round-over bit' pointing to the bit, 'Climb-cut this quadrant.' pointing to the top-left quadrant, and 'Climb-cut this quadrant.' pointing to the bottom-right quadrant.

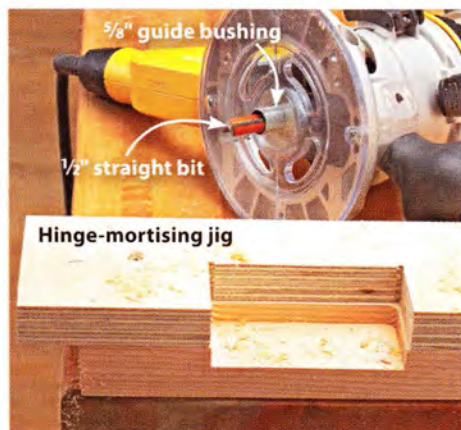
To know where to climb-cut, imagine a clock face on the round piece with the 12 and 6 aligned with the grain direction. Rout as shown in the drawing, rotating the piece counterclock-

—from the **WOOD®** shop

This diagram illustrates the router lift assembly. It shows a cross-section of the router table top, which is a thick, light-colored material. Two "Insert-plate leveling screws" are shown being driven into the top surface. Below the top, a yellow "Router-table top" is visible, which is supported by a "Router lift" mechanism. The lift mechanism consists of a vertical threaded rod that passes through a hole in the top and is secured with a nut and washer. A "Flathead wood screw" is shown being driven into the side of the router-table top, securing it to the lift mechanism.

—Dave Falkenstein, Cave Creek, Ariz.

How to cut quick, easy, and accurate hinge mortises



With the guide bushing mounted in the router's subbase, rout around the jig walls, then clean up the middle with repeated passes.

A jig provides the simplest way to make multiple identical hinge mortises. To begin, make a mortising jig from scrap stock to match your router setup (guide bushing or pattern bit). We used a 1/2"-diameter straight bit with a 5/8" guide bushing, so our jig cutout measured 1/16" greater than the hinge leaf on all three sides to account for the offset between the bit and bushing, as shown above. If you're using a bearing-guided pattern bit—where the bearing is the same diameter as the bit, shown below—make the cutout the same size as the hinge leaf.

Attach the jig to your workpiece with screws where they'll be concealed during final assembly. For project parts where you don't want screw holes, simply secure the mortising jig with clamps or double-faced tape.

—from the **WOOD**® shop



Plunge router transforms into mini drill press

I recently needed to drill 3/4"-diameter holes into the end grain of some 82"-long bed rails: too long for my drill press, too big for my doweling jig, and I didn't trust a handheld drill to make the holes perpendicular. Instead, I drilled the holes with my plunge router and the shop-made self-centering jig you see here.

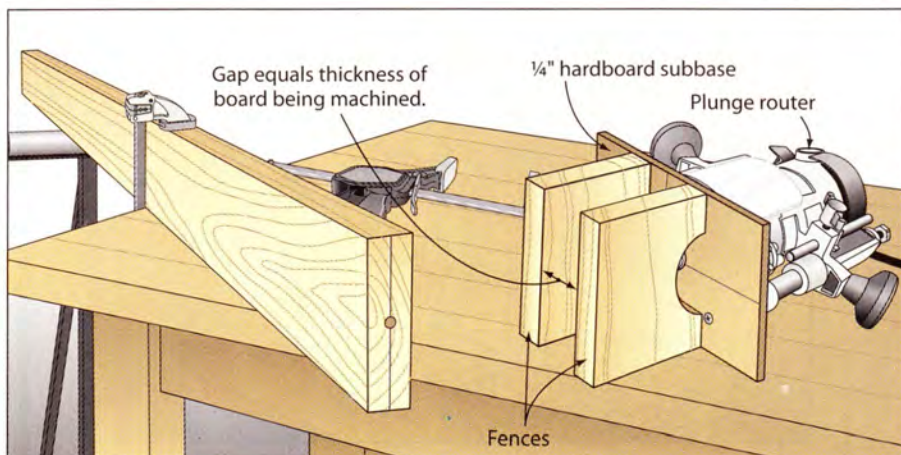
Start by making the jig from 1/4" hardboard and two scrapwood fences spaced to match the thickness of the workpiece you want to drill. Install

the jig in place of your router's factory-supplied subbase, making sure the bit is centered between the two fences.

Now install a 3/4" plunging straight bit, clamp the workpiece between the fences, and plunge slowly, withdrawing occasionally to clear chips.

With this jig, I've found I can plunge about 1 1/2" deep with my existing bits. If I need to go deeper, this plunged hole provides an effective guide for a Forstner bit in my handheld drill.

—Andy Newhouse, Syracuse, N.Y.



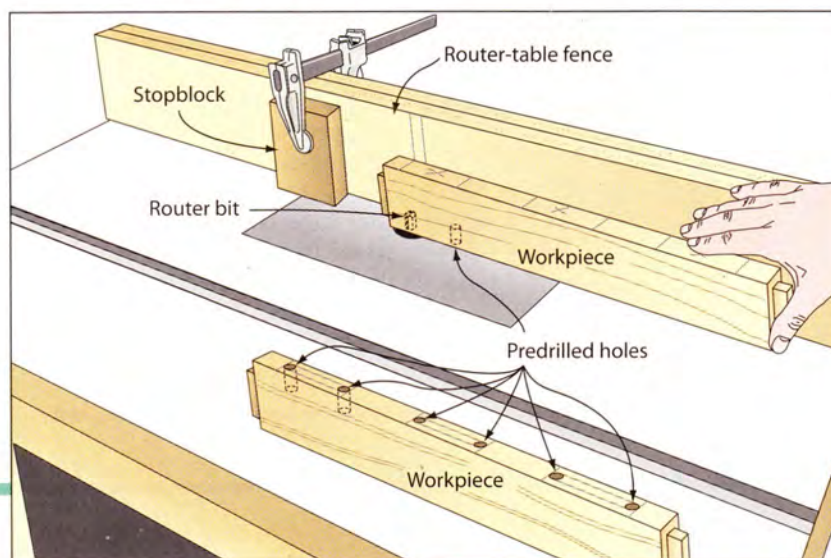
No-fuss mortise setup

I like to cut mortises and stopped grooves using the router table. Here's my method for skipping the hassle of a time-consuming trial-and-error setup process.

After laying out the mortise or stopped groove, use a Forstner bit to drill a hole at each end of the mortise

or groove. Then at your router table, drop one of the holes over a straight bit to set bit height, the fence position, and your first stopblock. Use the other hole to set the opposite stopblock, and you're set up to make the cut.

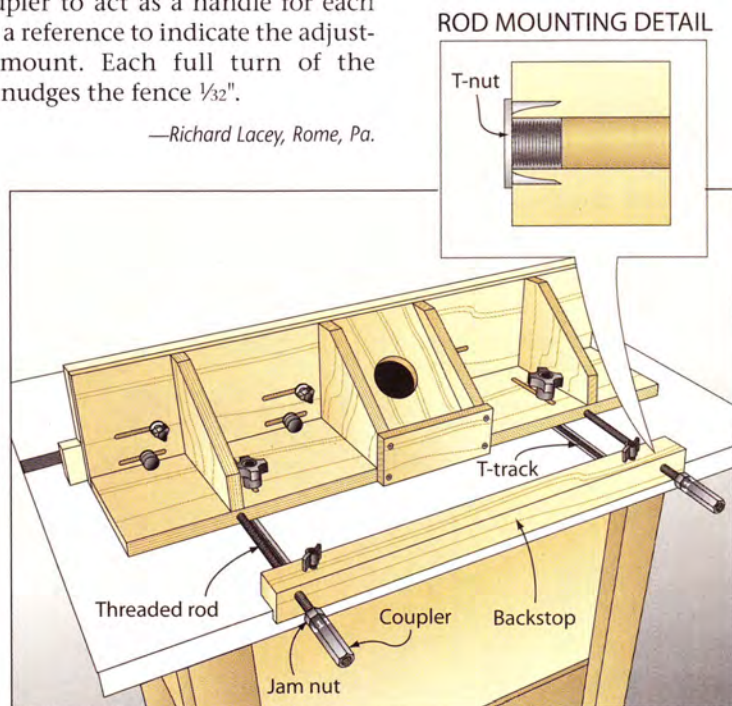
—Philip Exstante, Bridgewater, Conn.



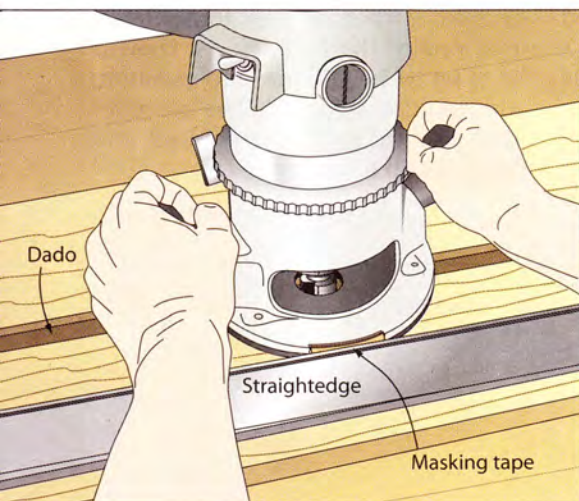
10-minute microadjuster

This simple router-table microadjuster takes only a few minutes to make, and pays huge dividends in accuracy. It consists of a rabbeted backstop that hooks over the rear of the router table and locks into the same T-track that the fence rides in. The backstop houses 6-32 pronged T-nuts with through holes to hold 6-32 threaded rods. I added a jam nut and coupler to act as a handle for each rod and a reference to indicate the adjustment amount. Each full turn of the coupler nudges the fence $\frac{1}{32}$ ".

—Richard Lacey, Rome, Pa.



Microadjust with masking tape

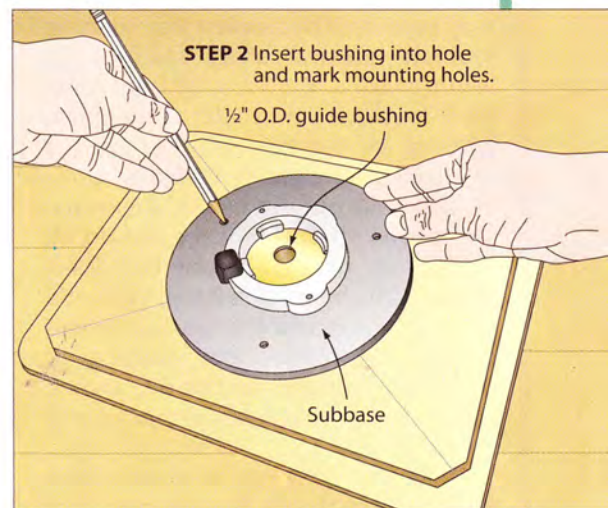
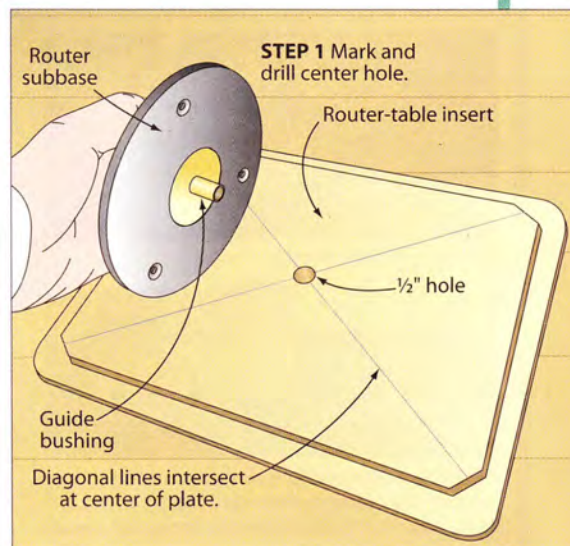


When you need a dado that is slightly wider than an available router bit, build up several layers of 2" masking-tape strips on the edge of your router base. You can microadjust a test cut by adding or subtracting layers of masking tape, taking care to place the tape flush with the bottom of the router base.

Make an initial cut with an untaped edge of your router base against the straightedge. Then, rotate the router so the tape runs against the straightedge, and cut in the opposite direction for the second cut. The tape pushes the bit outward, widening the dado ever so slightly.

—Charles Thompson, Washington, Iowa

Precisely place routers in insert plates



Here's a quick way to precisely center a router in a router-table insert plate. After cutting the insert to the proper size, mark diagonals to locate the center and drill a $\frac{1}{2}$ " hole there. With a $\frac{1}{2}$ " O.D. guide bushing mounted in your router's subbase—without the router attached—fit the bushing into the hole on the bottom of the insert and orient the subbase to ensure that the router controls are in reach and any through-the-table height-adjustment holes are toward the front. Mark the locations of the screw holes, drill and countersink to fit the subbase screws, and use a $1\frac{1}{2}$ " Forstner bit to enlarge the center hole. Then, mount the router to the insert plate and you're ready to rout.

—from the WOOD® shop



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Drilling



Drilling true

Using a long bit to drill true can be a tricky proposition. Minimize error by using a guide as you drill. Cut the guide from a length of scrap like the one shown at *left*. By keeping the bit parallel to both the face and bottom edge of the guide, you'll drill straight and true.

—from the **WOOD** shop

How to cut holes cleanly through veneer

Boring a large hole in a veneered piece like the clock face shown at *right* can cause tear-out. To prevent that, cut a waste block from ½" medium-density fiberboard the same size as the veneered piece. Place the waste block on the veneered stock with the edges flush, then center the stack under a Forstner bit and clamp the stack to the drill-press table. Now bore the hole as shown at *far right*. The waste block eliminates chipping for a clean-edged hole. (Download a free drill-press table hold-down clamp plan at woodmagazine.com/holddown.)

—from the **WOOD** shop



Masking tape works—if you flag it

There's nothing new about using masking tape on a bit to indicate drilling depth, but it can be difficult to tell when that tape sleeve hits the workpiece. And if you go a little too far, the sleeve tends to slide up the bit, making subsequent holes too deep. Rather than simply wrapping the tape around the bit like a sleeve, stick the loose ends together to form a flag. When the flapping flag wipes away all the sawdust around the hole, you've hit your depth mark.

—from the **WOOD** shop

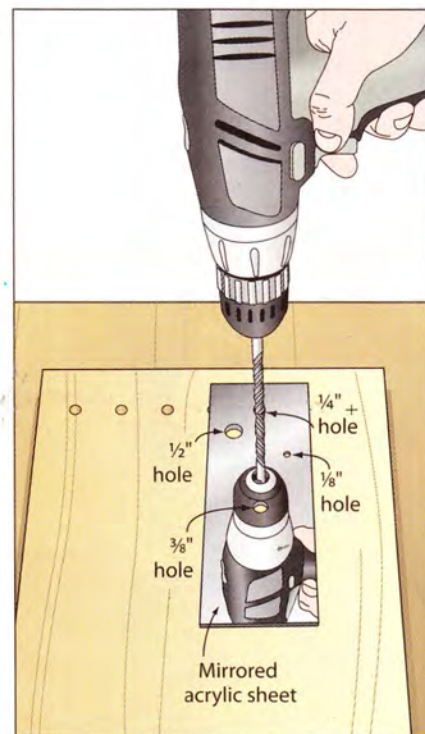


Check the mirror for boring true and square

Most of us believe that mirrors don't tell the truth on their best days. But when I need to drill a perpendicular hole and can't use a drill press (such as in the middle of a large workpiece or on a wall), I use a piece of mirrored acrylic with common hole sizes pre-drilled through it. When the image in the mirror and the drill bit align, the hole is perpendicular. Just be sure to view the bit from both front-to-back and side-to-side orientation.

I keep my drill mirror in my toolbox. To avoid scratches during storage, I made a cardboard sleeve.

—William Shockey, Portland, Ore.

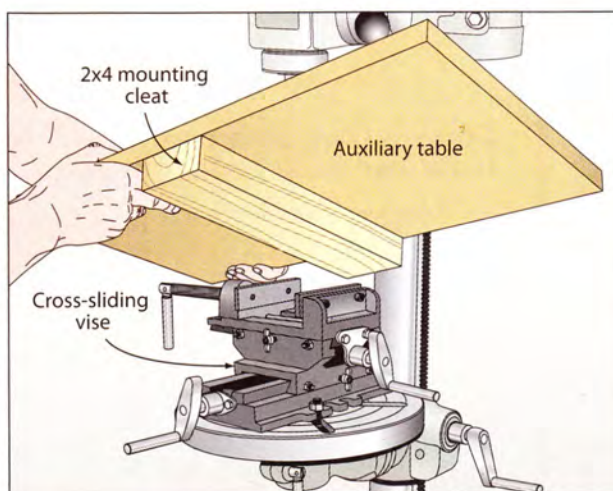


Change drill-press tables quickly with a vise

I use my drill press for both metal and woodworking, but found that I waste a lot of time switching from my oily old metalworking table to one more suitable for woodworking. But now I change auxiliary tables as easily as a drill bit since I added a cross-sliding vise to my drill-press table, as shown at *right*.

To install my auxiliary woodworking table, I mount a 2x4 cleat onto its bottom, and then clamp the cleat into the vise. Not only does this make changing tables lightning-quick, but I also can use the cross-sliding action of the vise to microadjust the table for precise drilling every time.

—Keith Stadler, Pisa, Italy



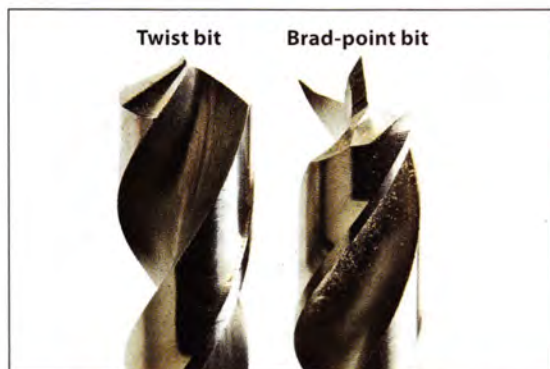
Cross-sliding vises are available in this country, too, from retailers such as Grizzly Industrial (G1064, \$47.75, 800-523-4777, or grizzly.com).

—from the **WOOD** shop



Learn more about drilling at woodmagazine.com/drilling

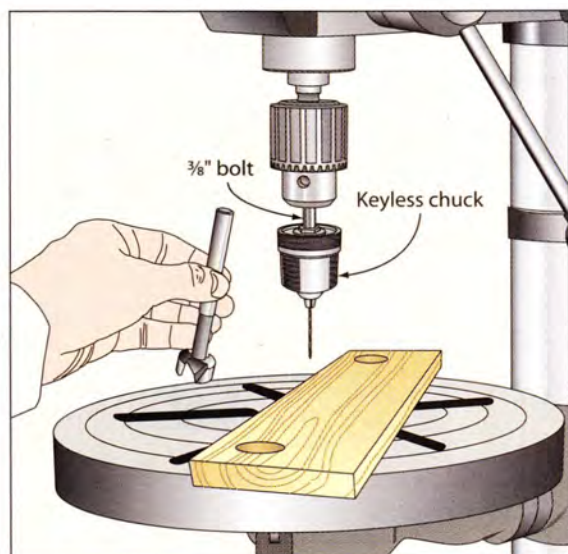
Get the (brad) point



Nothing frustrates you like watching a twist bit scoot away from the carefully marked location where you meant to drill a hole. With a brad-point bit, however, the tip stays planted where you want it. Start with a basic set, and use them just for woodworking.

—from the **WOOD®** shop

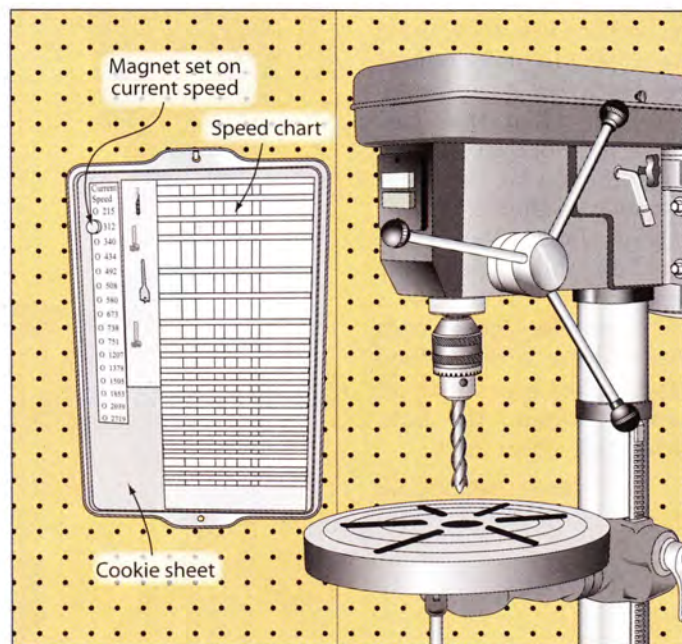
Easy-change chuck-in-a-chuck



My drill press has become much easier to use thanks to a keyless chuck I salvaged from a dead cordless drill. After removing the chuck from the drill, I simply threaded a $\frac{3}{8} \times 2\frac{1}{2}$ " steel bolt into my $\frac{3}{8}$ " keyless chuck and cut off the head. The bolt chucks into my drill press, making bit changes a breeze, especially for small bits. As an added benefit, when I change between small and large bits, I don't have to raise and lower the table height to allow for the difference in bit length; I just remove the keyless chuck and insert the longer bit.

—Mark Albrecht, Cody, Wyo.

"Cheat sheet" meets cookie sheet

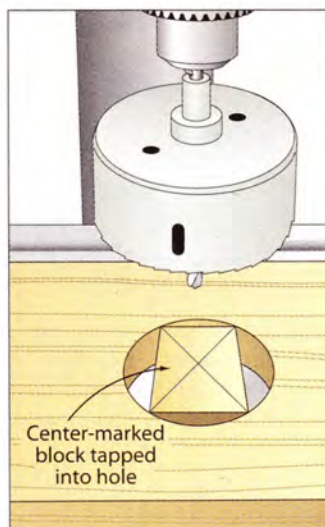


I've used the **WOOD** magazine "Drill-Press Speed Chart" (woodmagazine.com/charts) for years, trying to keep it taped up on the perforated hardboard behind my drill press, but it kept falling off. To prevent that, I grabbed an old cookie sheet from the kitchen, taped the chart to the metal, and hung it on a hook.

Then, taking it a step further, I made an additional chart of my drill-press speed settings, added it to the sheet, and stuck on a magnet to identify the current speed setting. Now I know whether I need to open my drill-press case to change its speed.

—Larry Cramer, Troy, Mich.

Square plug in a round hole for hole enlargement

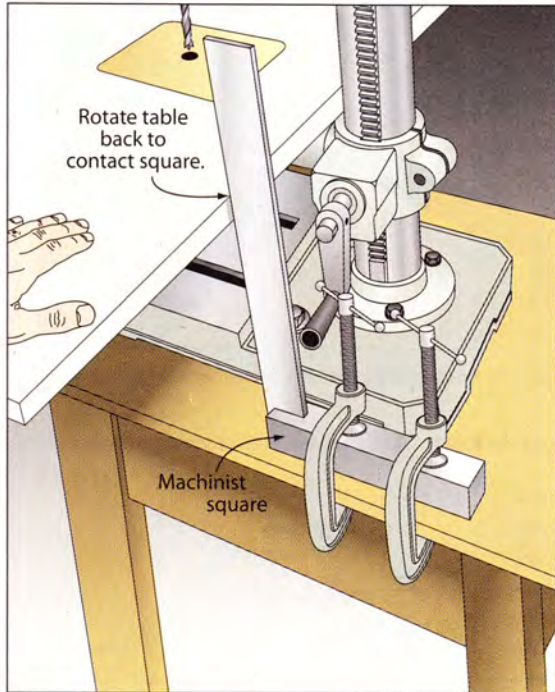


To enlarge existing holes, especially large ones made with a Forstner bit or holesaw, you can't just plug them with a dowel and then redrill. Last time I found myself in this spot, I realized that the filler plug didn't necessarily have to be round. A block of scrapwood does nicely.

Size the block for a snug fit in the hole, then mark the center of the block by drawing lines from corner to corner. X marks the spot for drilling the larger hole because the center mark of the block is also the hole center mark.

—Mike Randall, Ohio, Southland, New Zealand

Return your drill-press table to dead center



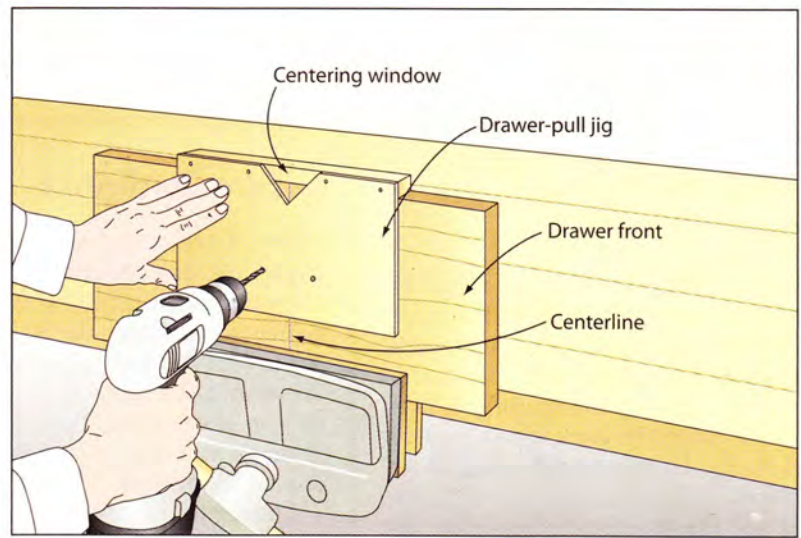
When I have to bore a counterbore on a shank hole at the drill press, the bit change sometimes requires me to lower the table out of the way. Recentering the workpiece under the bit proves difficult because the table tends to swing left or right as it changes height. Here's a trick for perfect realignment: Before moving the table, clamp a machinist square to the drill-press stand, with the blade's edge against the back of the table. After making the bit change, swing the table back into place until it once again touches the square.

—Avrahami Nissim, Garwolin, Poland

Big "V" pushes pull jig to higher level

As a woodshop teacher, I believe in "jigging up" to make projects easy and repeatable, especially because each operation will be repeated by 20–25 students in each class. An example is this drawer-pull jig, which features a V-shape centering window, shown *below*. The window makes the jig work even if the drawers are different sizes. Just center your line in the window, drill, and repeat.

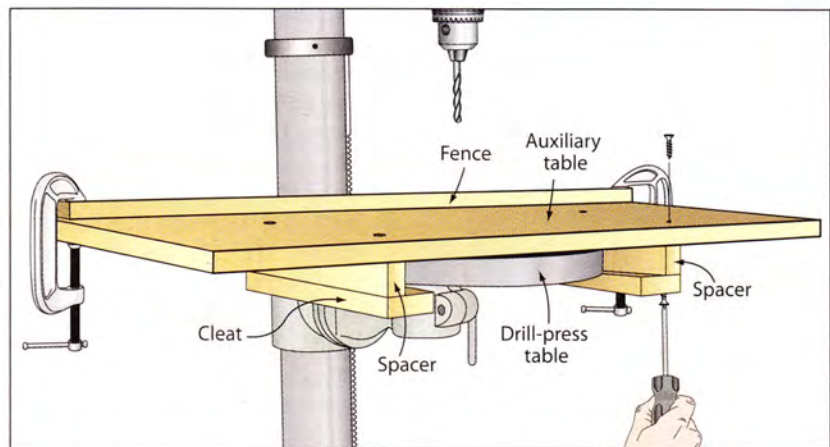
—Shane Burk, Lubbock, Texas



Supersimple drill-press table

Most of the auxiliary drill-press tables I've seen are unnecessarily complicated to install. This simple slide-on auxiliary table mounts to round or square drill-press tables, and you don't need to keep installing and removing bolts and nuts. Make the spacers about $\frac{1}{16}$ " narrower than the thickness of the drill-press table. Place the auxiliary table on the drill-press table before installing the cleats, and then tighten the cleat mounting screws just enough to hold it firmly. (Overtightening can distort the table.) To remove the table, simply loosen the rear cleat mounting screws a couple of turns each and slide it off.

—Paul Amberg, Hubertus, Wis.



Square makes a quick and easy stop

To consistently position a hole in multiple workpieces, clamp a framing square to your drill-press table. The two legs of the square act as both a fence and a stop. Squares don't come with dust-relief grooves, though, so blow away chips and dust after each hole to prevent debris from becoming trapped between your workplace and the square.

—from the **WOOD®** shop

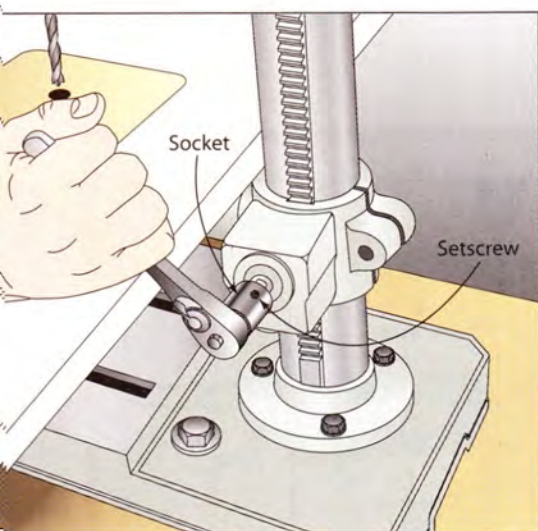


Make your crank-handle user-friendly

My auxiliary drill-press table adds a lot of surface area for better stock support than the small factory-supplied table. But it's so large, every time I wanted to raise or lower it, I had to slide it away from the table-elevation crank in order to turn the handle—frustrating, to say the least.

I fixed the problem by replacing the crank with an old socket, which I had drilled and tapped to accept a setscrew. The setscrew location corresponds with the flat part of the crankshaft and locks it into place. Now I just use a ratcheting socket wrench to raise or lower the table.

—Concepcion Ortiz, Sioux City, Iowa



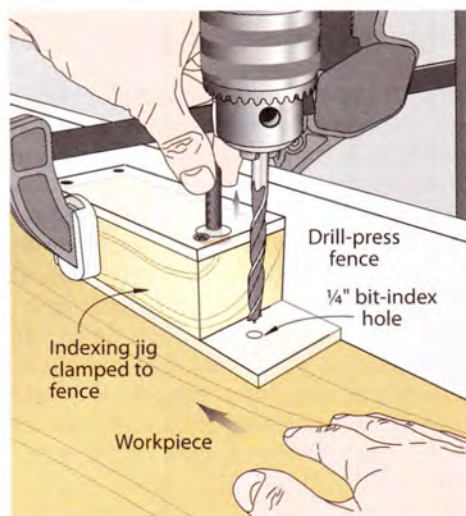
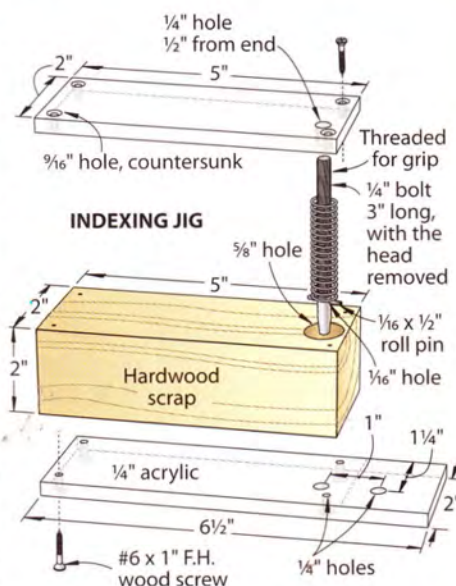
Locate shelf-pin holes in a snap

When I build shelves, I want them adjustable, and the most effective way to do that is with shelf pins. But getting perfectly repeatable results is challenging unless you use an indexing system. To remove the risk and eliminate most of the measuring, I made this see-through indexing jig to create perfectly spaced $\frac{1}{4}$ " shelf-pin holes by the bushel.

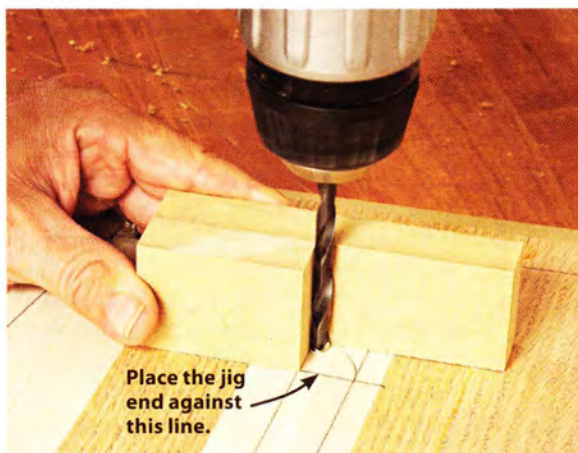
The key to the jig is the spring-loaded pin, which snaps down into the previously drilled shelf-pin hole to ensure positive location. I made the pin by cutting the head off a $\frac{1}{4} \times 3$ " bolt and then grinding a slight taper on the non-threaded end. Next, I drilled it and inserted a $\frac{1}{16}$ " roll pin in the rod to compress the spring. You can make the jig housing as shown with almost any material, but I used $\frac{1}{4}$ " acrylic for the top and bottom, as shown. It provides a slick surface and allows me to see the previously drilled hole.

To use the jig (as shown, it spaces holes 1" apart and $1\frac{1}{4}$ " on center from the edge of the workpiece), set your drill-press fence $1\frac{1}{4}$ " from the bit center, and drill the first hole. Next, place the jig over the workpiece so that the pin snaps into the hole. Move the workpiece and jig together along the fence until the drill bit fits perfectly into the bit-index hole in the base, and then clamp the jig to the fence. Once attached to the fence, it will now "float" over the workpiece, so you can drill a hole, lift the pin, slide the workpiece along the fence until the pin snaps down into that hole, drill, and repeat.

—Vell Holcombe, Milton, Pa.



Drill perpendicular holes without a drill press



Instead of wrestling with large boards on a small drill-press table, use this simple bit-alignment jig, made from $\frac{3}{4}$ " MDF scrap, when drilling holes in the boards (for example, holes for making rounded handle corners, as shown *above*). To make the jig, cut two $1\frac{1}{2}$ "-wide pieces with squared ends: one $2\frac{1}{2}$ " long and one 5" long. Glue them together with one end flush. To drill a perfectly perpendicular hole, first align the jig with two adjacent layout lines, then nestle the bit in the corner of the jig.

—from the **WOOD**® shop

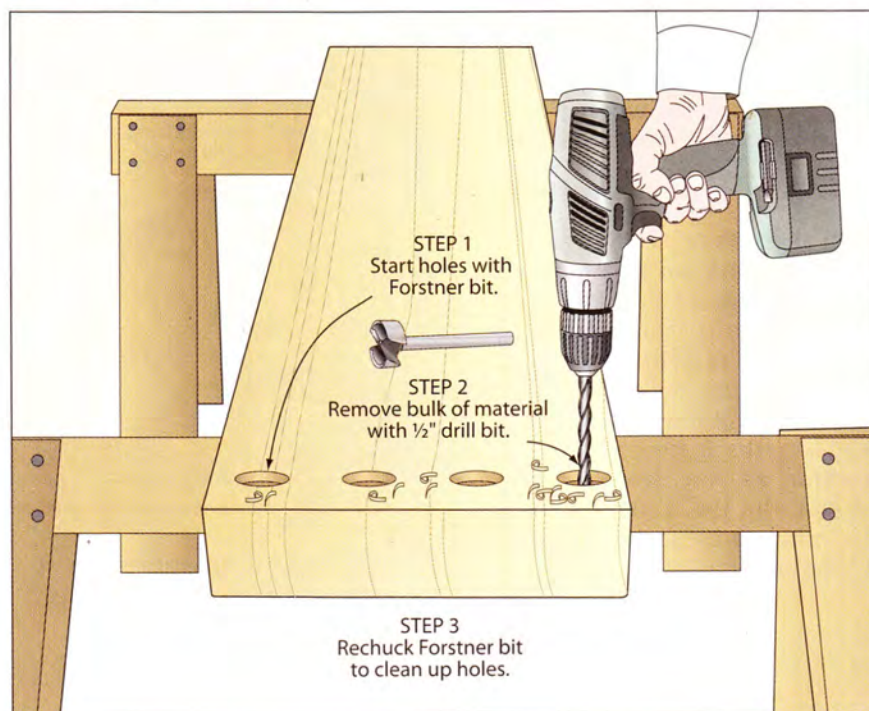
Deep-hole drilling made easy



Drilling deep holes on the lathe can be a smoky, noisy job. To prevent this, apply a dry cutting-tool lubricant, such as Bostik DriCote, to your drill bit before each use, as shown *above*. Then while drilling, frequently back the drill bit out of the hole to clear chips from the flutes.

—from the **WOOD** shop

Small bits help lighten the load for big bits



It takes a lot of torque to spin large Forstner bits. And the bits have to hog away so much material that they overheat easily, which makes them dull faster. To make your expensive big bits last longer, you can have smaller bits do some of the work.

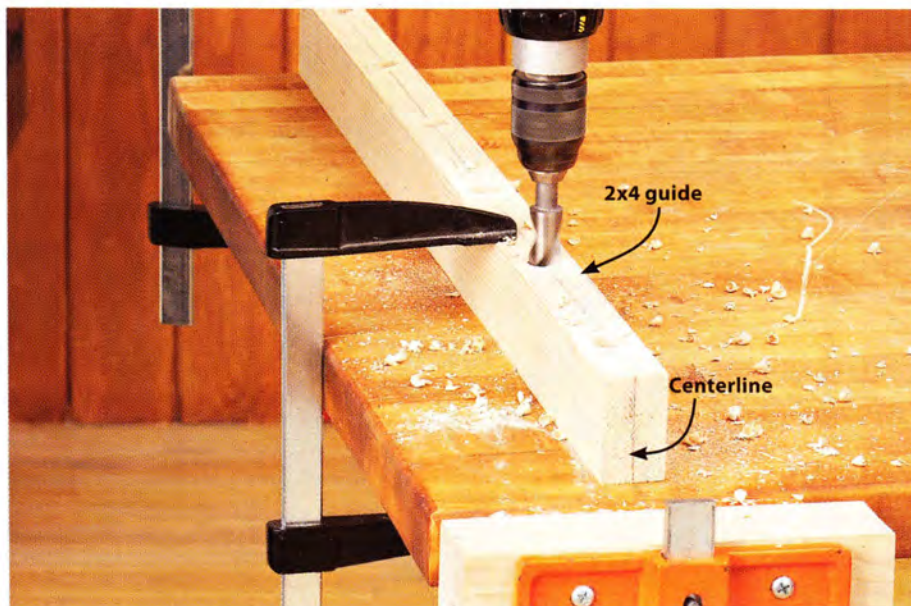
Start with the Forstner bit and bore just deep enough to create a well-defined shoulder. Next, switch to a $\frac{1}{2}$ " bit and drill several holes through the single hole to remove much of the wood. Finally, rechuck the Forstner bit and finish the hole.

—Buck Nall, Alma, Ga.

For a video on sharpening Forstner bits, go to woodmagazine.com/forstner



Straight drilling goes to the dogs



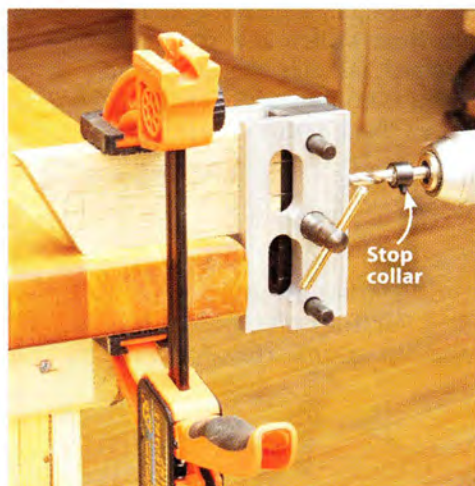
Drilling holes accurately in a large workpiece, such as the top of your workbench, poses a logistic problem. You can't take the drill press to the workpiece; however, you can take its accuracy by creating a drilling guide for your handheld drill. Square up a 2x4 and machine it down to $1\frac{3}{8} \times 2\frac{1}{4}$ ". Crosscut it to the width of the bench in which you'd like to drill the holes. Mark the doghole locations, centered, on the edge of the board, and use your square to transfer the centers of the outermost dogholes around the sides and end of the board. Now use a $\frac{3}{4}$ " Forstner bit in your drill press to drill the holes through the drill guide, backing the bit out regularly to clear the chips.

Mark the row of dogholes on your bench aligning the mark with the dog on your bench's vise. Draw a crosshatch to locate the first hole. Then position the drilling guide's alignment marks with those on the bench. Clamp the guide in place along with a backer board to prevent tear-out on the bottom of the bench.

Now use a $\frac{3}{4}$ " brad-point guided by the holes in the drill guide to drill through the workbench. After completing the holes, rout a small chamfer around the lip of each one to eliminate sharp corners.

—from the **WOOD**® shop

Make short work of drilling small parts



Holding a short piece steady when drilling dowel holes can be a problem, especially if your bench lacks a vise. Here's an easy workaround: Mount the doweling jig to the workpiece and then clamp the workpiece near the corner of the bench, as shown, to keep the jig from accidentally rocking as you drill. For a mitered end, flip the workpiece so that the miter faces up and then mount your doweling jig.

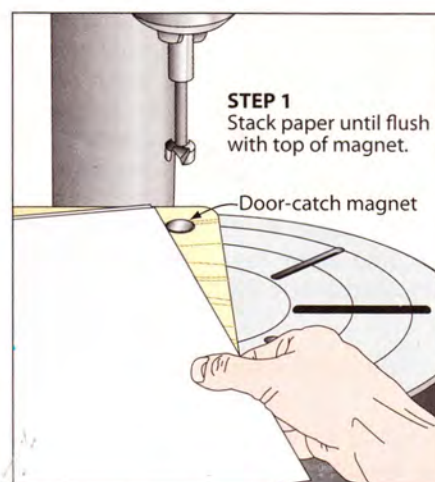
—from the **WOOD** shop

Paper-thin drill-press precision

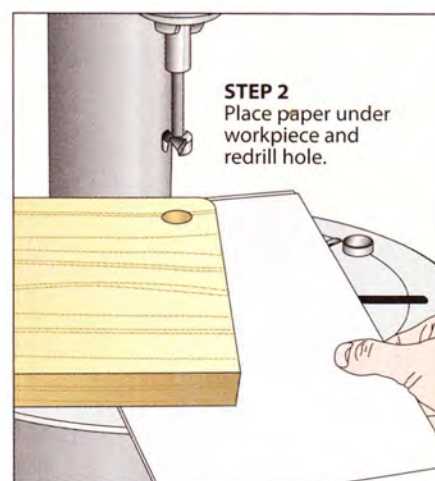
The hole I drilled to house a magnetic door catch was just a hair too shallow. Rather than go through tedious trial and error—and risk drilling too deep—here's what I did.

Leaving the drill's depth setting unchanged, I seated the magnet in the hole. Next, I stacked printer paper next to the magnet until the stack was flush with the magnet. Then I slid the stack of papers underneath the door, raising it just enough to redrill the hole at a perfect depth.

—Charles Mak, Calgary, Alta.



STEP 1
Stack paper until flush with top of magnet.

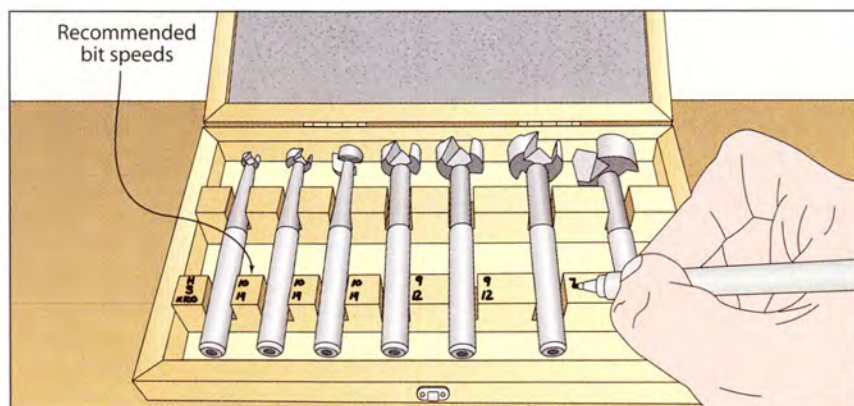


STEP 2
Place paper under workpiece and redrill hole.

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You have to know the limit to heed it



Every drill bit has its optimal speed where it cuts quickly without burning. You can keep a drill-press speed chart handy, but here's a no-fuss way to get the right speeds for bit sets that come in cases. Write the recommended speed next to the bit inside the case, as shown *above*. Here's the method I use: On the top line, I jot down the hardwood speed; below that, the softwood speed. To save space, I drop the last two zeros

from the number. For instance, 600 rpm would be expressed as a 6. A 12 indicates 1,200 rpm.

—John Anderson, Long Island, Va.

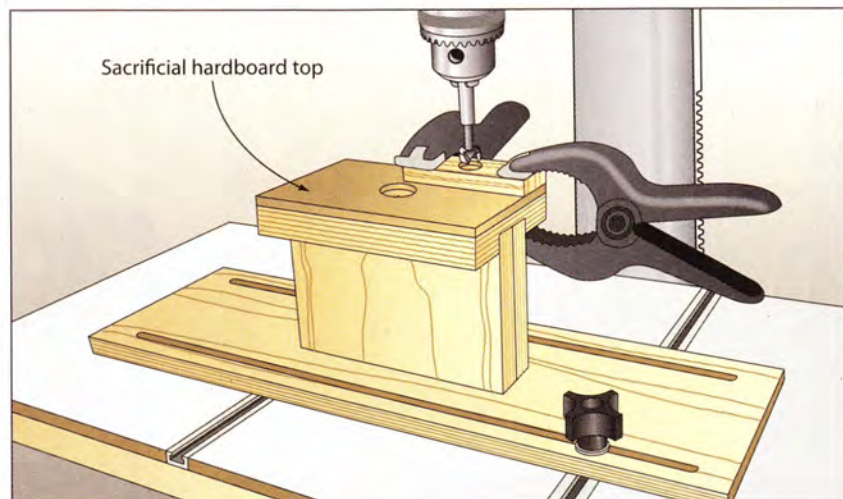
Download several free charts including a drill-press speed chart at woodmagazine.com/charts



Tiny table gets a grip on small parts

The smaller the part you drill on your drill press, the more important it is to clamp it for safety and accuracy. Ironically, the smaller the part, the more difficult it is to clamp to the table. My solution, this I-beam fixture, provides a tiny table to position and clamp most any small part. My drill-press auxiliary table already has T-track, so the slots on the fixture allow it to move in two dimensions; but you could also simply clamp the base of the fixture to your table. Hot-glue a hardboard top to the fixture for a sacrificial surface that can be pried off once it's damaged.

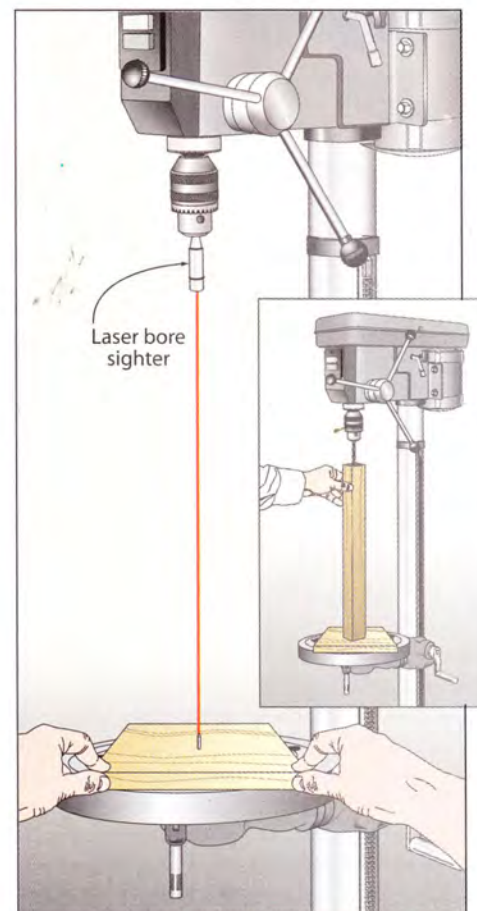
—Len Urban, Rancho Mirage, Calif.



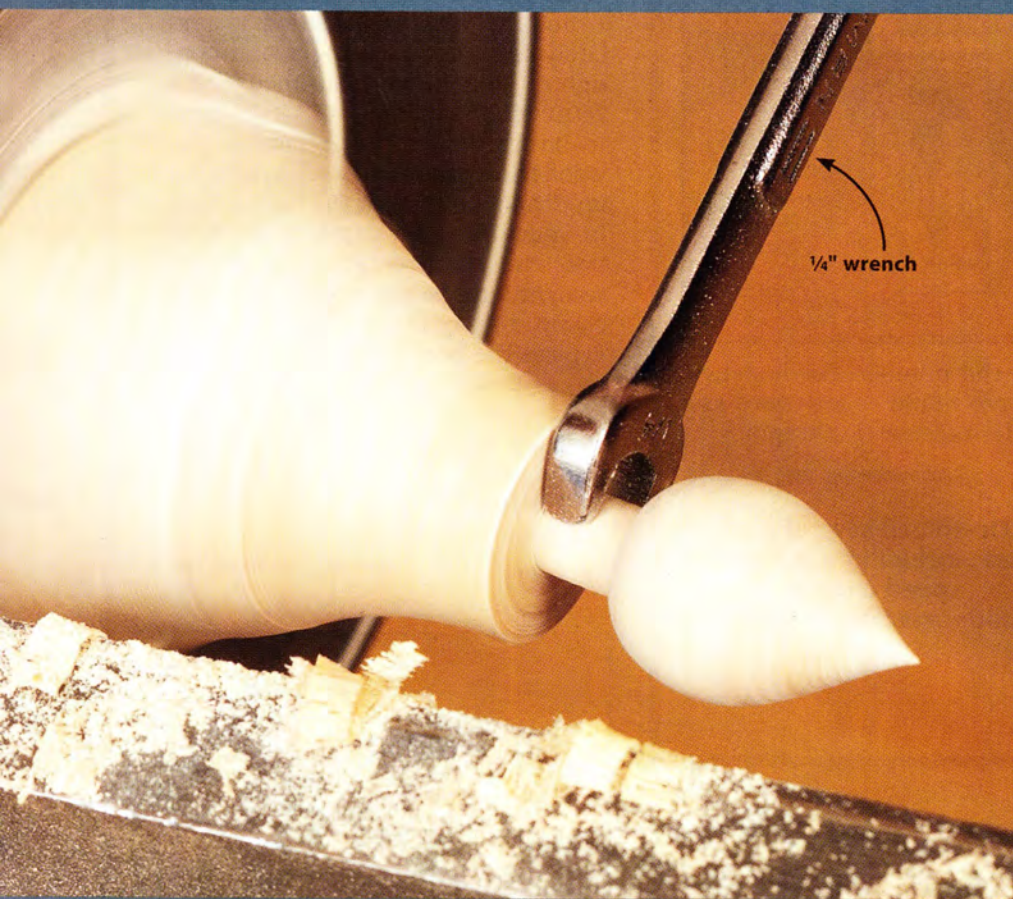
Sighting in on centered spindle holes

To align the legs on a set of bunk beds, I came up with this method to precisely center a hole using a laser bore sighter for rifles (Bushnell item 740100C, \$25; call 800-423-3537 or go to bushnell.com). First, make a plywood base with a nail or screw sticking up through it. Mount the bore sighter in your drill-press chuck. Then position the base so the laser points straight into the point of the nail, and clamp the base securely in place. Replace the bore sighter with the correct drill bit. Mark the centers on both ends of the spindle and press one end, centered, onto the nail point. Now, by drilling into the top center mark, you drill precisely on axis and down the center of the spindle.

—Mark Lutz, The Dalles, Ore.



Turning



A toolbox full of gauges

When you need a gauge to check diameters on a turning project, you don't ordinarily reach for a wrench. But open-end wrenches make handy gauges for checking small diameters because, unlike calipers, there's no need for setting and resetting the jaws. For example, have $\frac{3}{8}$ ", $\frac{1}{2}$ ", $\frac{3}{8}$ ", and $\frac{1}{4}$ " wrenches ready for gauging the diameters when you're turning a finial or tenon. Lightly touch the wrench to the turning. When the wrench slides easily over the workpiece, you've reached the desired diameter.

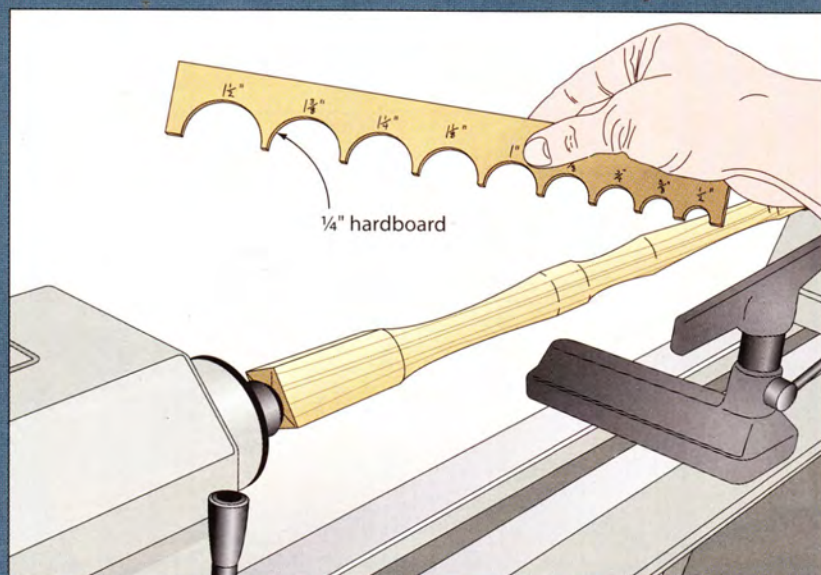
—from the **WOOD**® shop

Speedy spindle gauge

While manually duplicating spindles on my lathe, I grew tired of constantly setting and resetting my calipers to check the various diameters along the workpiece. So I made this simple hardwood storyboard to speed up the process.

I drew a centerline on a scrap of hardboard and drilled holes of diminishing sizes with my Forstner bits. At the tablesaw, I cut to one side of the centerline, ripping the board in two and discarding the waste side. On the remaining strip, I marked each half-circle with its diameter. By placing the desired-size semicircle over the spindle, I quickly check my progress at critical diameters.

—Byron Manthey, Hutchinson, Minn.



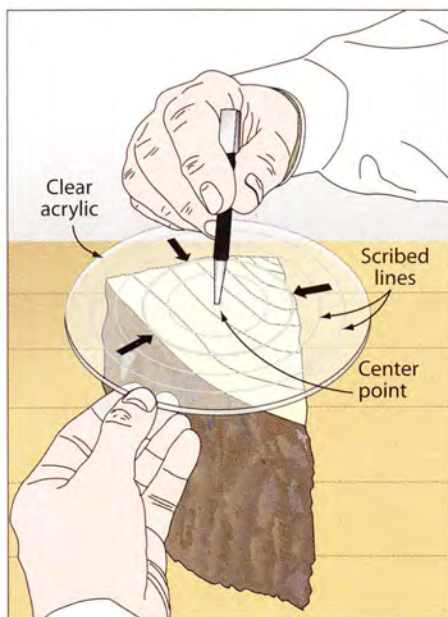
Surefire center finder for firewood

I've found some of the most beautiful turning blanks in the firewood pile. The good news: It's free. Bad news: It's hard to find the center of odd-shaped pieces. So I've come up with this trick to solve that problem.

Mount a piece of flat scrap wood to your lathe's faceplate. Then attach a piece of acrylic to it using double-faced tape and chuck it in your lathe. Turn the acrylic to a disc. Use a $\frac{1}{16}$ " bit in a tailstock chuck to drill a hole through the centerpoint, and then scribe concentric circles on the disc at $\frac{1}{2}$ " intervals with a skew chisel.

Use the centerfinder by positioning it over the end of the stock and adjusting it until one of the circles is completely inscribed in the solid, usable portion of the wood. Then use a nail set or an awl to mark the center through the centered hole in the disc.

—Dick Ayers, Barron, Wis.

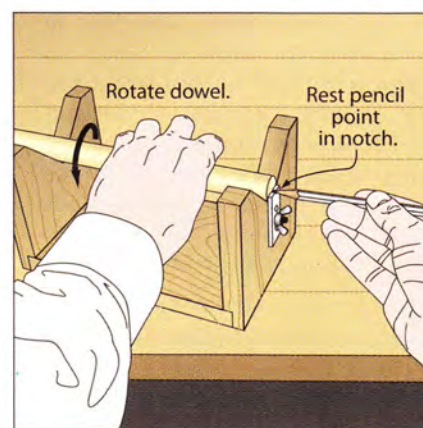


Superior dowel centerfinder

To find the center on the ends of a dowel, I made my own centerfinding tool, shown below. With the dowel resting in the Vs, I rotate it against the point of a pencil that I've inserted into the pencil rest. As the dowel turns, the pencil traces a circle centered on the dowel's center.

By raising or lowering the pencil rest, I can dial in dead center on any dowel, but I find a small circle adequate for drilling or chucking the dowel into my lathe.

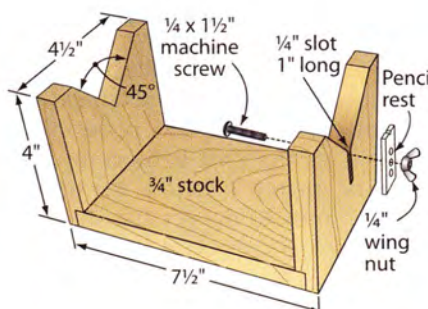
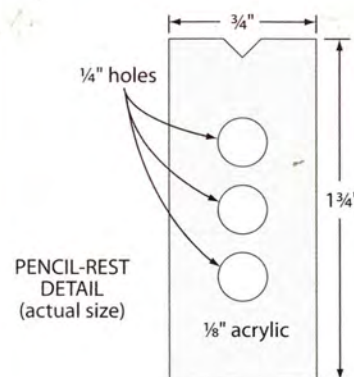
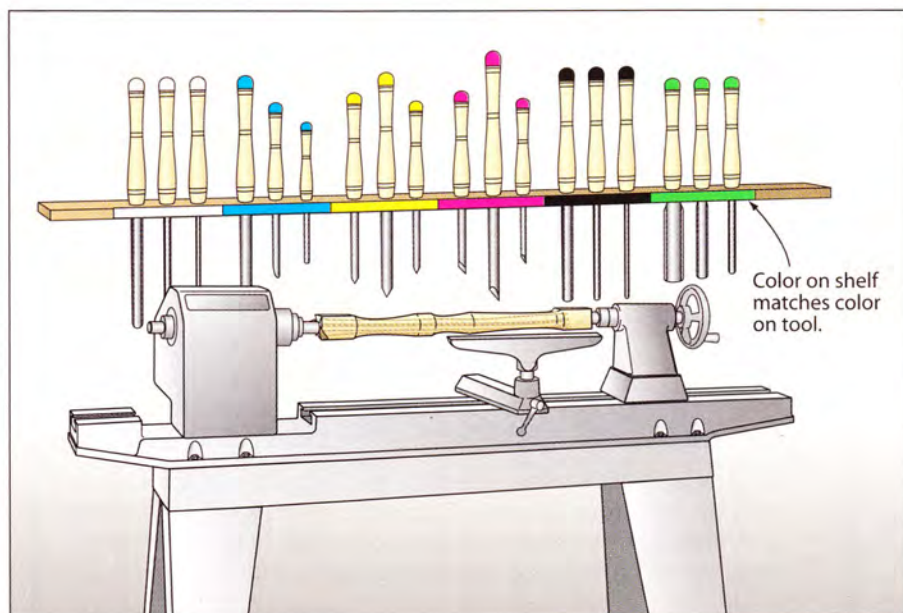
—Mark Ostrom, Lindstrom, Minn.



At-a-glance tool ID

To quickly identify, choose, and replace my turning tools, I color-coded the ends of the handles with paint. All bowl gouges get one color, scrapers get another, and so on. This eliminates lengthy browsing time I'd rather spend turning. I painted corresponding strips of color on the tool holder to quickly replace the tool when I'm finished with it.

—Robert McGee, Massena, N.Y.



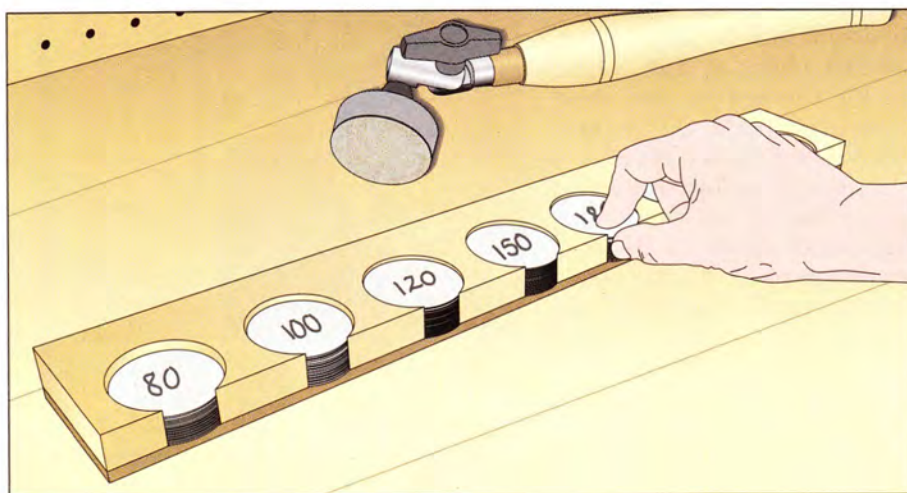
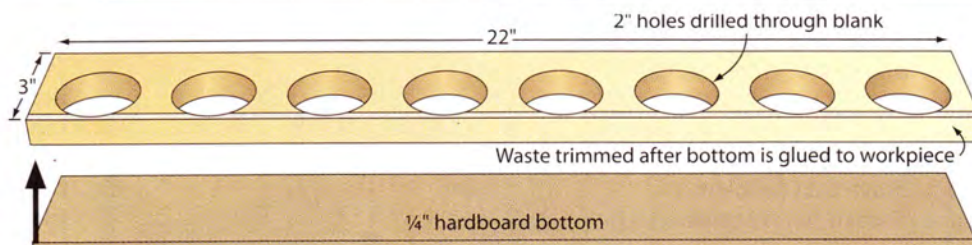
Sanding-disc server for woodturners

As a woodturner, I use a variety of 2" hook-and-loop abrasive discs for my sanding tool. However, those small discs are hard to keep sorted and inconvenient to store. To solve both problems, I made this sanding-disc server that looks like a tray for holding poker chips.

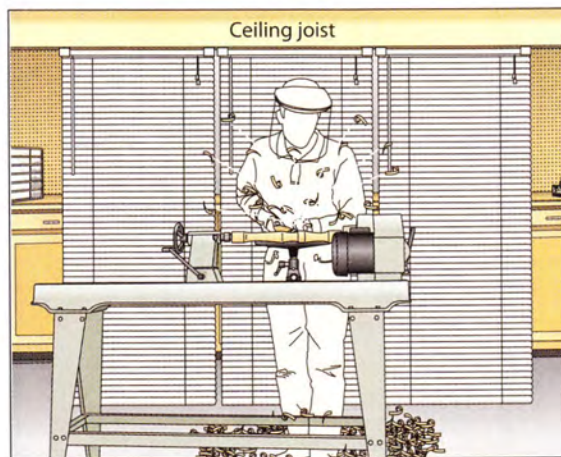
Because I use eight different grits, I drilled eight 2" holes through a scrap of MDF, and then glued on a hardboard base. Using my tablesaw, I then trimmed the front off the server—enough to create an opening about a thumb's width—to provide easy access to the discs.

The server holds quite a few discs, and I can load my inertia sander and align the disc by simply dipping the tool's pad into the hole. To make things even easier, I boldly mark the grit of each disc on its back before storing it in the server.

—Bill Esposito, Rindge, N.H.



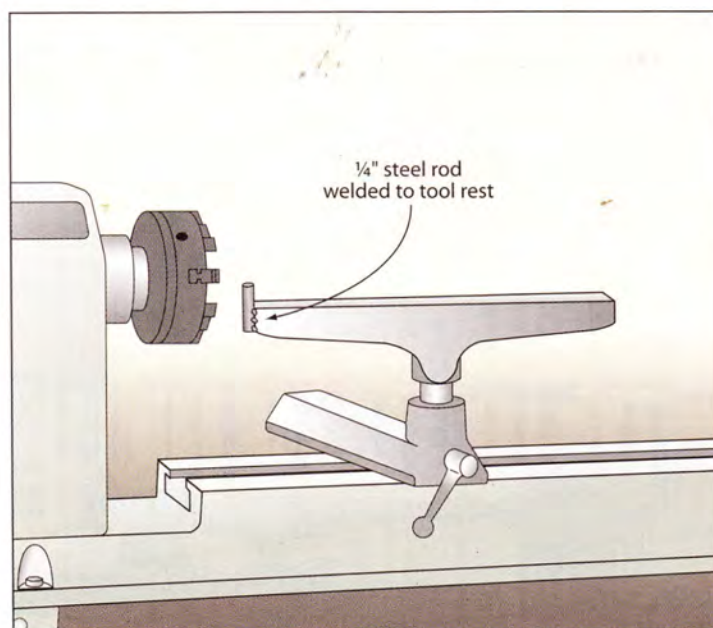
Shield your shop from lathe shavings



I finally got fed up with shavings flying all over my shop when I'm at the lathe, but I didn't want a bulky wood or cardboard shield taking up space. Instead, I mounted some old window blinds to a ceiling joist behind my lathe workspace. Now, before I start a turning project, I lower the blinds to deflect the shavings. When I'm finished, I simply raise the blinds up out of the way.

—Ron Altier, West Lafayette, Ohio

Tool stop ends chuck mishaps



To provide both a visual reference and a guard that prevents a turning tool from catching in spinning chuck jaws, I welded a 1/4"-diameter steel rod to the end of my tool rest. As a beginning turner, I find this gives me extra safety and peace of mind.

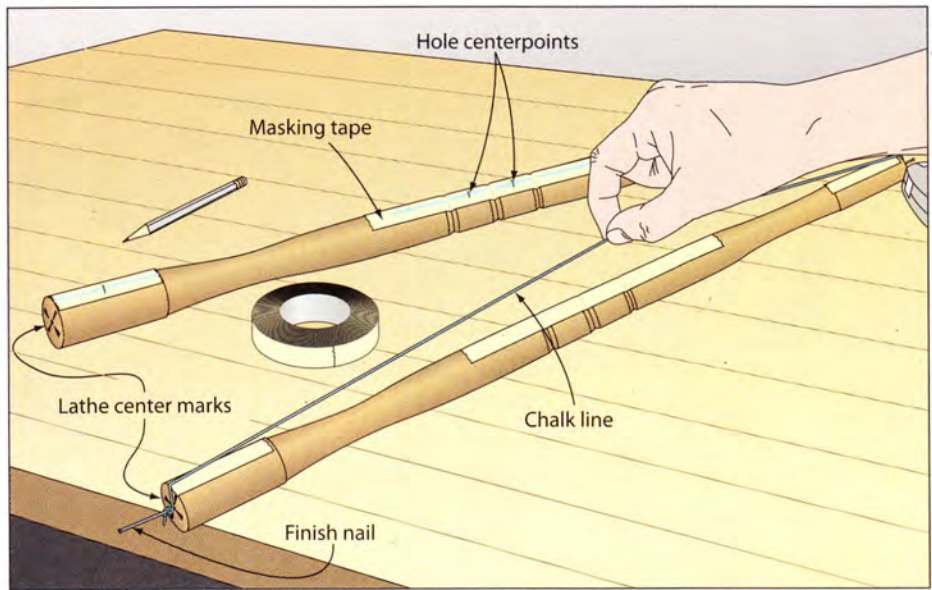
—Kenneth Cook, Plattsburgh, N.Y.

Surefire centerline for spindles

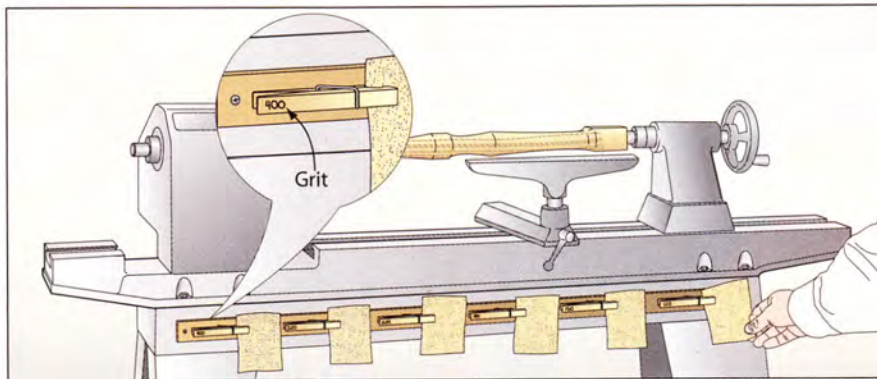
There are a few occasions, such as during chair or crib construction, when you need to drill multiple holes in a spindle and the holes need to be in a straight line with each other. The best way I've found to keep them in line is with a carefully placed and snapped chalk line.

To prevent chalk dust from fouling open-grained wood, I first cover, with masking tape, the spindle area to be marked. Then, I tap a small finish nail into the holes left by the lathe centers on each end of the spindle, carefully string the chalk line between the nails, making sure the string comes off the same side of each nail, and snap the line.

—Dick Benedetti, Lake Oswego, Ore.



Proper grit ready in a pinch



When shaping spindles or other projects on my lathe, I use small pieces of sandpaper of various grits when sanding. To keep the small sheets handy and sorted out, I glued wooden clothespins onto a thin strip of plywood and mounted the hanger to the front of the lathe stand. On the clothespins, I marked the grit of each abrasive.

—Rick Mercado, Colorado Springs, Colo.

Sand to the beat of a lathe-mounted drum

I made a few of the wine-bottle holders shown *near right*. After cutting out the holder on my bandsaw, it was easy enough to sand out the outside curve with my belt sander, but the inside curve was a different story. The crescent measures about 10" in diameter and the largest sanding drum I could find had only a 3" diameter, which made it difficult to get a smooth surface. Then I realized a 3x24" sanding belt would work if I created a mega-size sanding drum.

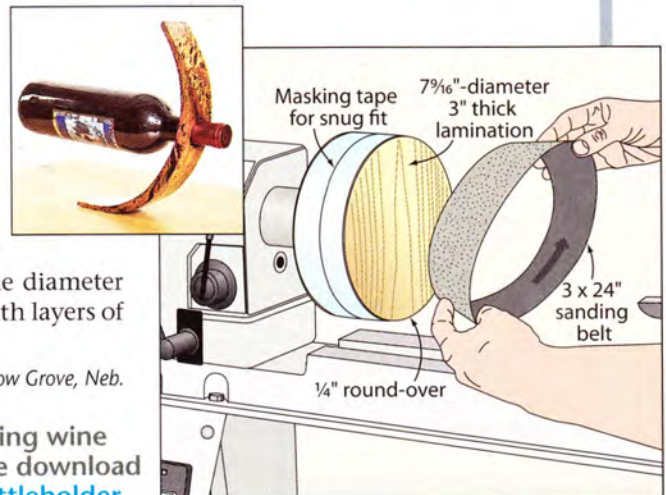
First, I glued up a 3"-thick blank out of 2x10 stock and bandsawed it into an 8" disc. Next, I mounted the blank on my lathe and turned it to 7 $\frac{1}{16}$ ", with a

slight round-over on the edge of the drum to ease installation of the belt.

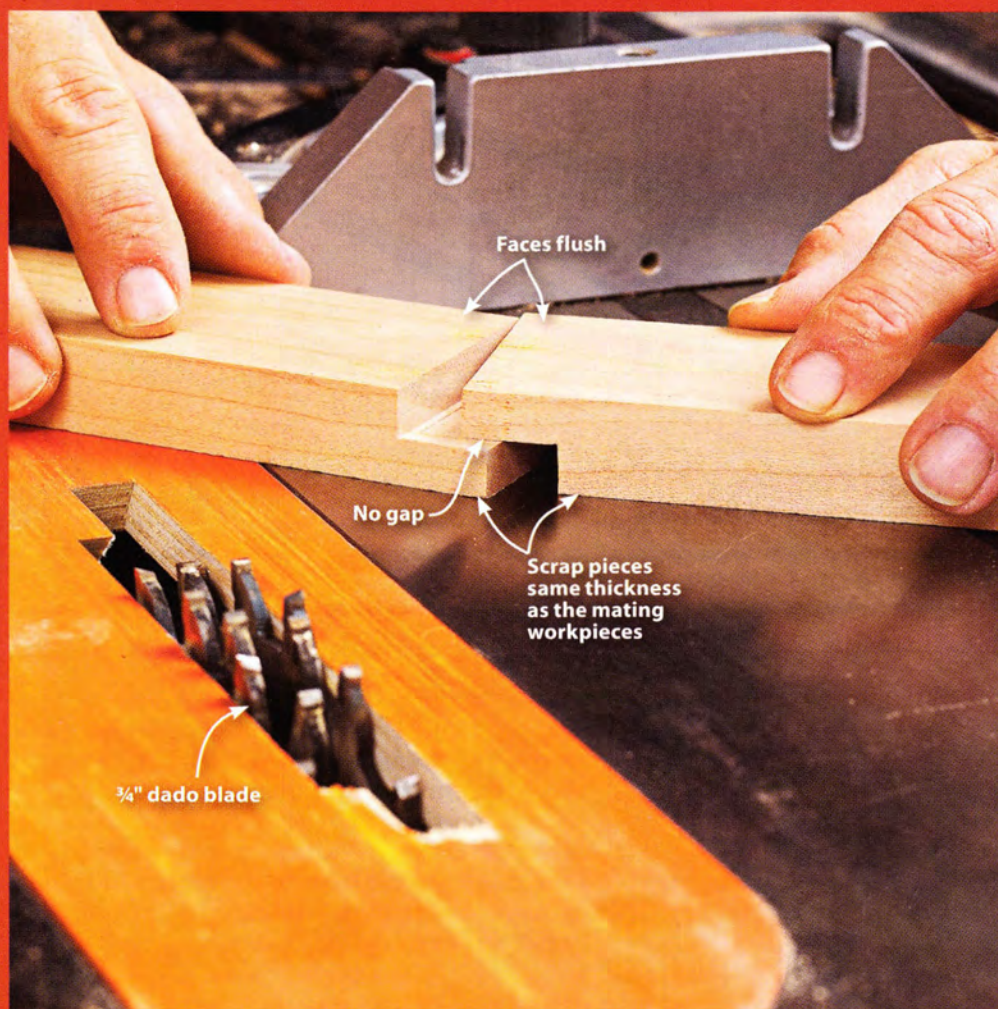
One thing I've learned after using the drum for a while: Not all 24" sanding belts are created equal. If the belt is too tight, turn the drum slightly smaller. A slightly loose belt is better because the diameter can be increased or reduced with layers of masking tape.

—Jerry O'Banion, Meadow Grove, Neb.

For information about making wine bottle holders, visit our free download at: woodmagazine.com/bottleholder.



Joinery



Cut perfect half-laps

A flush-fitting half-lap joint begins with setting the dado blade to the proper height. Start with two pieces of scrap the same thickness as your workpieces. Set the dado-blade height to just under half the thickness of the scrap. Using the miter gauge to guide the piece, cut a rabbet in one end of each scrap. With the two pieces resting on a flat surface, test how the rabbets fit together. Adjust the blade height until the faces fit flush with no gap between the rabbets.

—from the **WOOD®** shop

For clean mortises, start at both ends

Whether you make a mortise with a drill press or mortising machine, drill both ends of the mortise first. Then drill evenly spaced holes between them, as shown at right. Leaving the ends until last could cause the bit to deflect into the mortise, resulting in ends that are not straight up and down. If you drill the mortise, pare the sides smooth with a $\frac{3}{4}$ " or 1" chisel, shown at far right. Square the corners and ends with a $\frac{1}{4}$ " chisel.

—from the **WOOD** shop

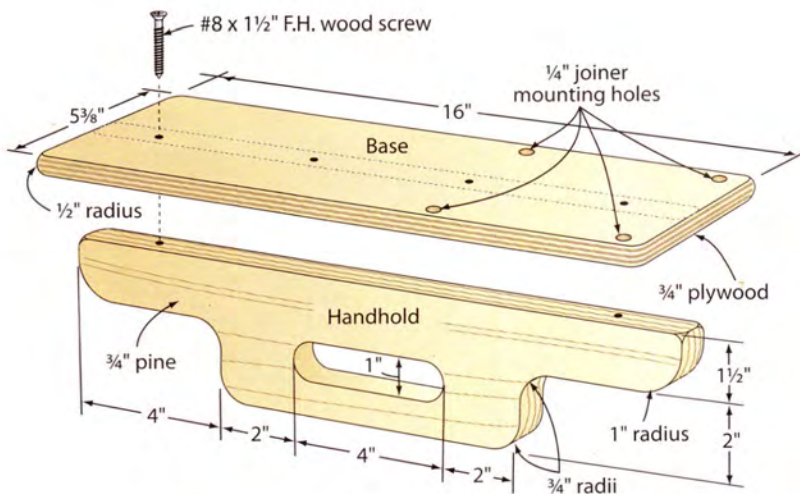


Add stability when you're on the edge



Sometimes, cutting slots into workpiece edges can be tricky because the short fence fails to provide enough reference surface to prevent tipping. That's when you need this base extension. Build it from plywood or any scrap stock that's flat.

—from the **WOOD®** shop



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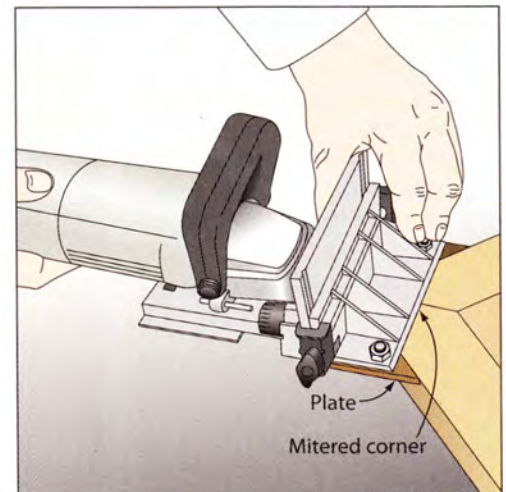
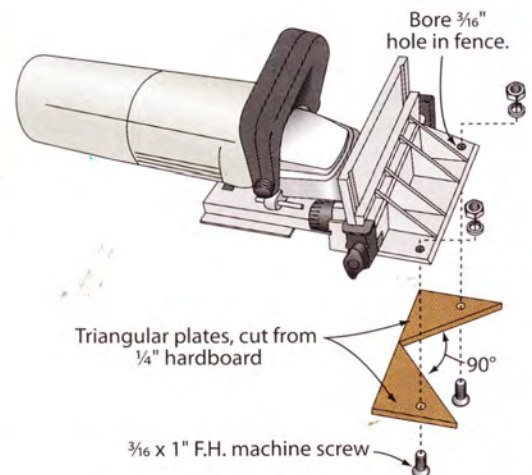
Strengthen miters using your biscuit joiner and splines

Miter joints are some of the weakest in woodworking because of poor end-grain to end-grain gluing. That's why I always reinforce my miter joints with a decorative spline. I used to cut the spline slots with a V-groove jig on my tablesaw, but that gets awkward with a large frame.

I now use my biscuit joiner to simplify this process. By adding hardboard plates to the joiner's fence, where shown *below*, the slot is automatically centered on the joint. I cut two triangles and screwed them to the fence with the inside corners touching.

One caveat: Remember that you could accidentally cut into the added plates with the joiner's blade if you don't properly adjust the depth.

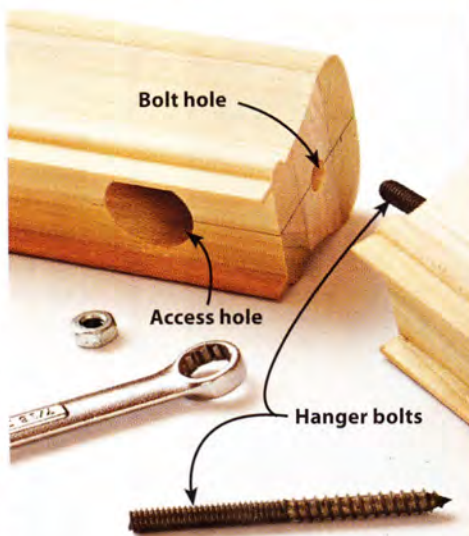
—Jack Williams, Elephant Butte, N.M.



How to hook up a humongous handrail

Handrail stock comes in 8', 12', and 16' lengths, but some handrails need to be several feet longer than 16'. How do you join two pieces of rail to get the length you need? The humble hanger bolt offers a handy solution. These headless fasteners have one end threaded like a lag screw, the other like a bolt. You'll find them in various sizes at the home center or hardware store; and for exterior use, they come in stainless steel or galvanized versions.

To join rails end to end, square cut your rails, making certain the joints land on or near one of the rail's supports. Mark the center of the mating ends and drill a pilot hole sized for the screw end of the hanger bolt in one of the handrail ends. Use two locked nuts on the bolt threads to drive the screw into the pilot hole. On the mating rail end, drill a hole for the bolt end sized about $\frac{1}{8}$ " larger than the bolt, as shown at right. Then use a 1" spade or Forstner bit to bore an access hole in the bottom of the rail that intersects the bolt hole you just drilled.



An end-to-end handrail joint works much like a bed-frame joint. The nut on the hanger bolt pulls the butt joint tight.

Insert the protruding hanger bolt into the bolt hole. Add a washer and thread the nut through the access hole. Finger-tighten the nut and line up the rail ends. Tighten the nut with a small wrench.

—from the WOOD® shop

Hate miters? Try this miterless alternative

In the same way that corner blocks eliminate mitered door-casing corners, these corner blocks eliminate outside corner miters in baseboard moldings. They also withstand bumps from shoes and vacuum cleaners. To make them, cut blanks about 1" to 1½" square, and add a $\frac{1}{8}$ " round-over to the three exposed edges. For a decorative touch, rout a profile on the top end on all four faces. Then add a $\frac{1}{4}$ " notch for outside corners or a chamfer for inside corners to allow for drywall imperfections.

—from the WOOD shop

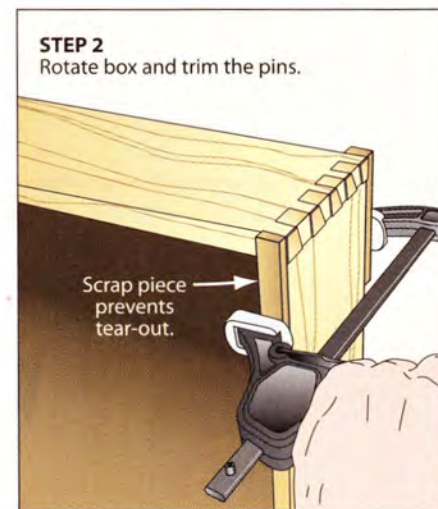
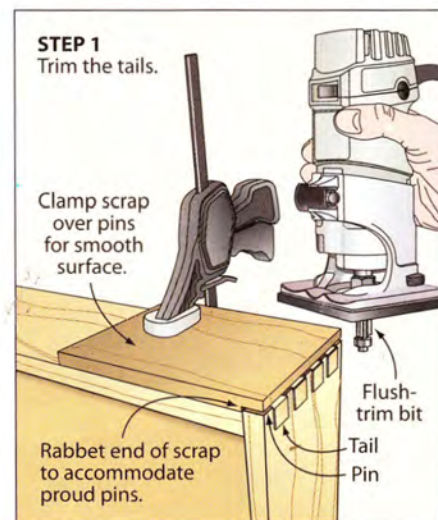


Proud dovetails get cut down to size

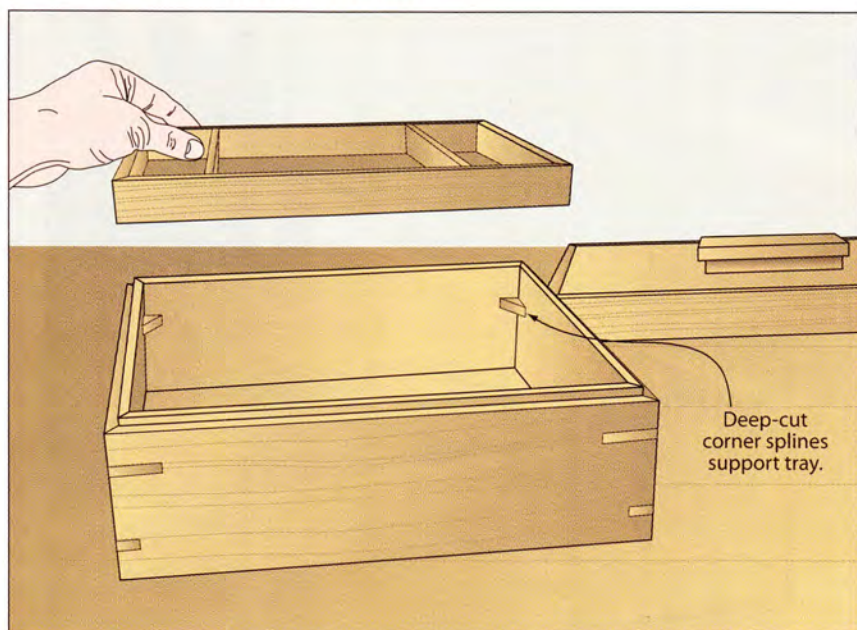
When cutting through dovetails, I leave the pins and tails a hair proud. But sanding them down afterward can be tedious. To quickly and cleanly trim dovetail joints, use a handheld router with a 1"-long flush-trim bit.

To trim the tails, rabbet the end of a scrap board to fit over the proud pins. Clamp the board over the pin side, as shown below, to give the router a smooth surface on which to ride. With the tails flat, trim the pins by clamping pieces of sacrificial scrap to the edges of the sides to prevent tear-out from the cross-grain routing. Finally, a few minutes with a palm sander or sanding block will yield a perfect dovetail joint.

—Steven Gaddis, Winston, Ore.



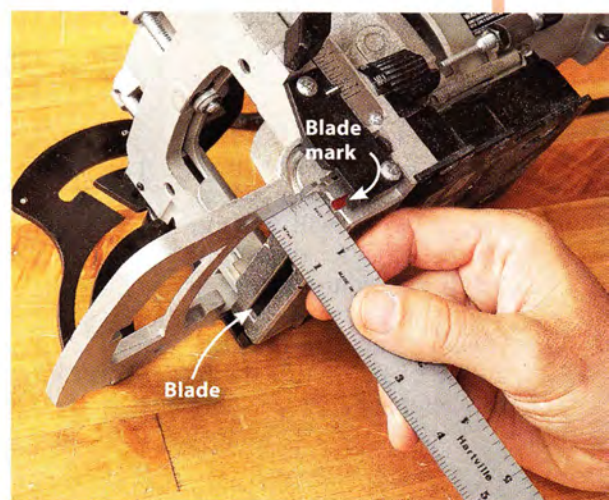
Form and function meet in jewelry box modification



The design I use for making jewelry boxes includes a lift-out tray. I've altered the original design so it's easier to incorporate supports for the tray. By making the top corner splines deeper than the bottom ones, the top ones protrude slightly into the interior of the box. This provides a resting place for the box's tray.

—Howard Baker, Valdese, N.C.

Bull's-eye your biscuits



To accurately center biscuits on the thickness of your workpieces, use a rule instead of the joiner's built-in scale. First unplug the tool. Place your ruler against the biscuit-joiner fence and center the blade mark at half the part's thickness. For example, center the blade $\frac{3}{8}$ " from the fence for $\frac{3}{4}$ "-thick parts.

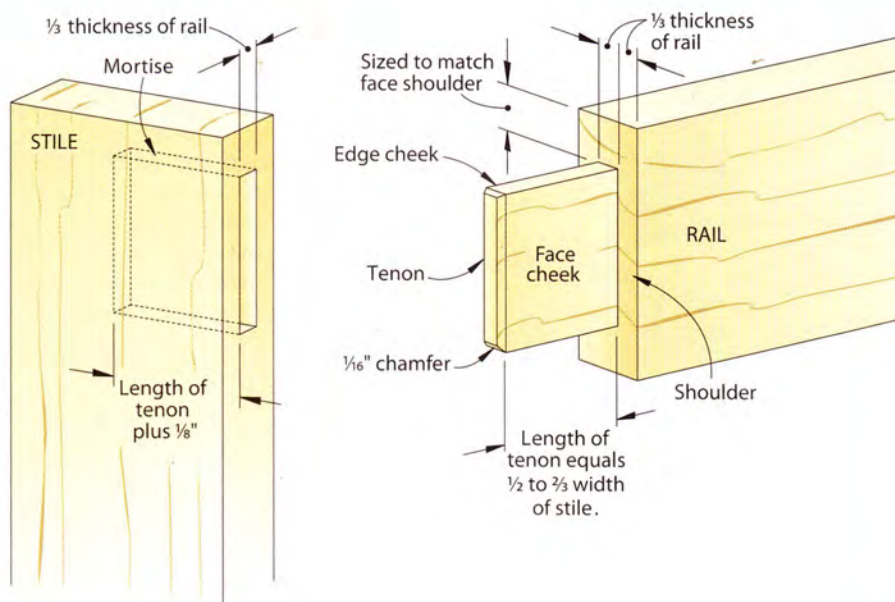
—from the WOOD® shop

Helpful hints on sizing mortises and tenons

Because specific mortise-and-tenon sizes vary by application, there's no universal rule of thumb for sizing this type of joint. But as a general guideline, when rails and stiles are the same thickness, make the tenon about $\frac{1}{3}$ the total thickness of the tenoned workpiece, and about $\frac{1}{2}$ – $\frac{2}{3}$ as long as the width of the mortised workpiece. Though it's not structurally necessary, cutting a shoulder adjacent to the rail's edge, as well as the face, allows you to completely hide the mortise. To save setup time, size the edge shoulder the same as the face shoulder.

For example, for a matching $\frac{3}{4} \times 2$ " stile and rail, first make the stile's mortise $1\frac{1}{2}$ " long, $\frac{1}{4}$ " wide, and $1-1\frac{3}{8}$ " deep; then make a tenon sized for a snug fit without forcing, and about $\frac{1}{8}$ " short of the mortise depth to allow for glue.

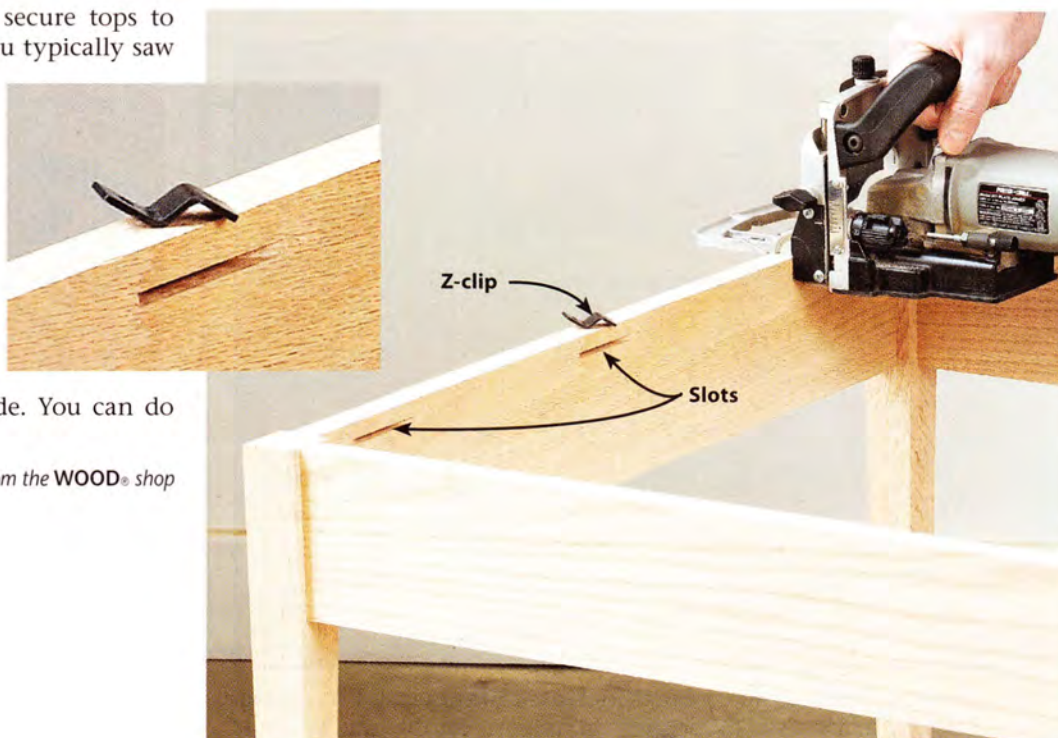
—from the WOOD shop



Mount a tabletop...with your biscuit joiner

To use “Z-clip” fasteners to secure tops to tables, desks, and dressers, you typically saw a blade kerf along the rails or aprons. To avoid any potential weakening that might result from the full-length kerf, cut slots with your biscuit joiner where the fasteners will mount. Set the joiner for the No. 10 depth slot, adjust the fence to cut the proper distance from the top of the rail (usually $\frac{1}{2}$ "), and plunge the blade. You can do this before or after assembly.

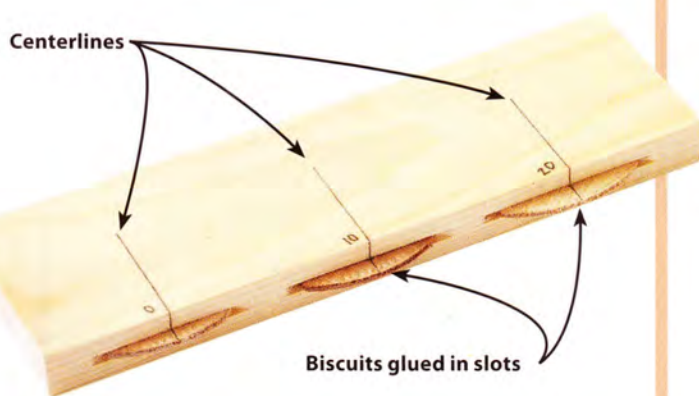
—from the **WOOD®** shop



Save time with a biscuit gauge

Wondering which size biscuit best suits your project parts? Make this simple gauge to show the width of #0, #10, or #20 biscuits and the slots that hold them. Simply mill a slot for each size, glue in a biscuit—making sure you push it in only halfway—and mark a centerline for each. Then line up the centerline on your gauge with the layout line on your workpiece for a quick reference on which to use. (Use the largest biscuit possible for maximum strength.)

—from the **WOOD** shop

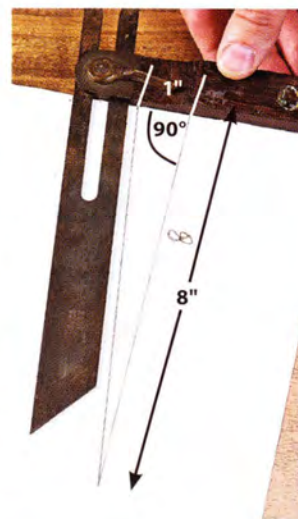


Use a ratio to set a dovetail angle

You'll often see the angle of a dovetail expressed as a ratio of slope to rise (1:8, for example) instead of in degrees. Why? Because it's easier to set a bevel gauge using a ratio instead of a degree setting. Here's how.

If, for example, your project calls for a 1:8 dovetail ratio, mark a 1"-long segment on the edge of a piece of paper. Then, starting at one end of the line, draw a perpendicular line 8" long. Use a straightedge to join the ends of the two lines to make a triangle; then place your bevel-gauge handle along the edge of the paper and pivot the blade to align with the long line.

—from the **WOOD** shop

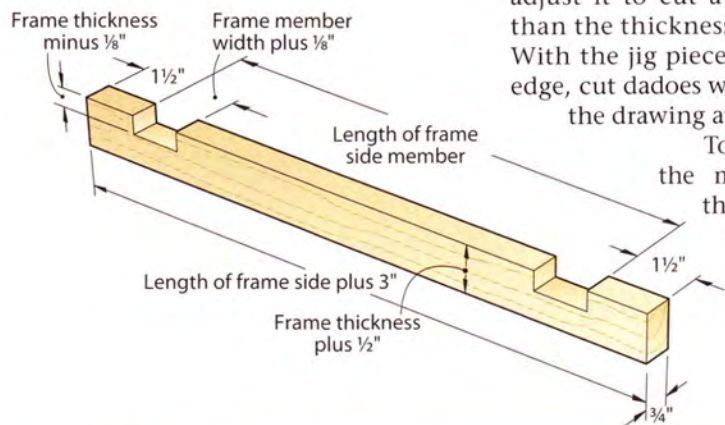


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Add clamping jigs for more grip with less slip

Juggling two pairs of clamps to glue a mitered frame can end in frustration. With these jigs, however, one set of clamps squares the frame.

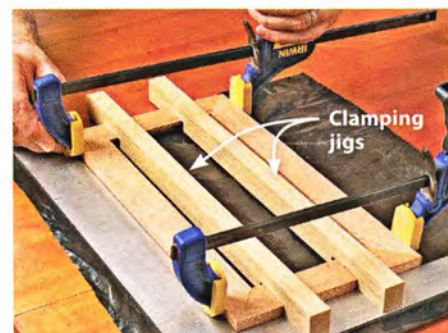


To make a pair, rip two pieces of $\frac{3}{4}$ "-thick scrap $\frac{1}{2}$ " wider than the thickness of the frame parts and 3" longer than the frame sides, as shown at *left*. Then install a $\frac{3}{4}$ " dado blade, and adjust it to cut a dado $\frac{1}{8}$ " shallower than the thickness of the frame parts. With the jig pieces taped together on edge, cut dados where dimensioned in the drawing at *left*.

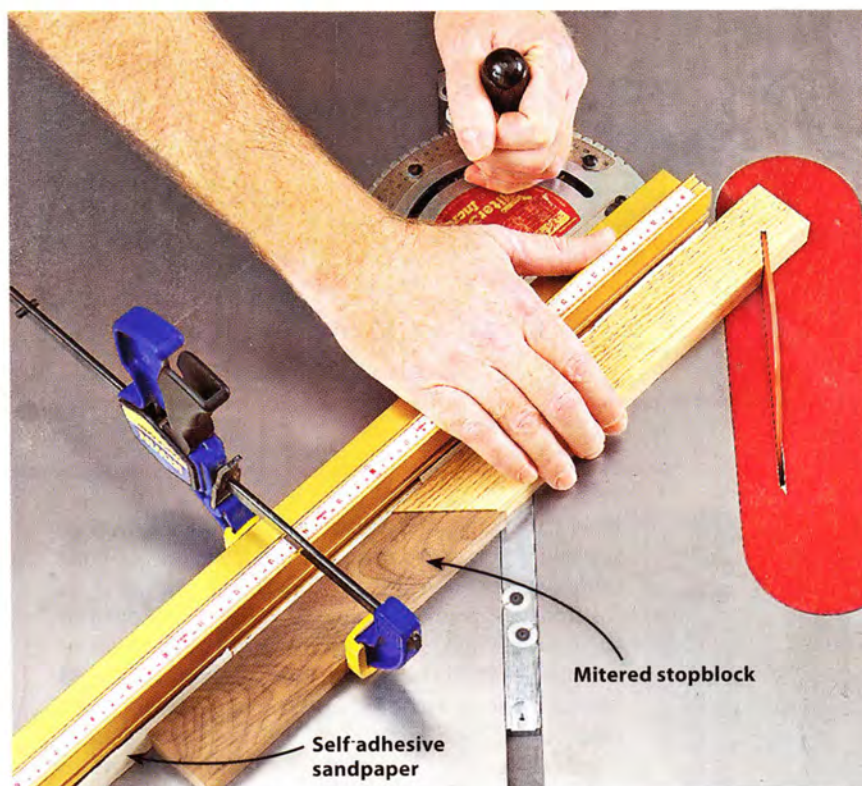
To use the jigs, glue the miters and assemble the frame flat on a workbench, aligning the corners with a framing square.

(Protect the workbench with a plastic trash bag.) Position the jigs close to the inside corners, capturing the frame ends in the dados. Now, clamp the frame sides, as shown *below*, with the clamping jigs holding the short frame members in place.

—from the **WOOD**® shop



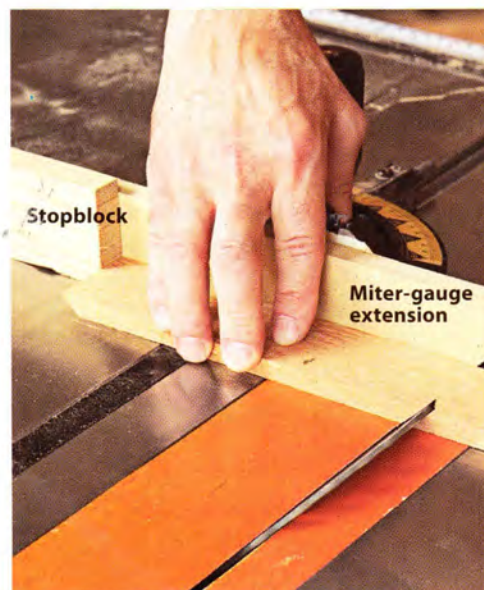
Lock in mitered parts for on-the-money cuts



For parts with mitered ends, such as picture-frame sides, use a stopblock with the complementary angle. This provides a more positive "lock" than a rectangular block. Apply 120-grit, self-adhesive sandpaper to the miter-gauge extension for better grip on your workpieces.

—from the **WOOD** shop

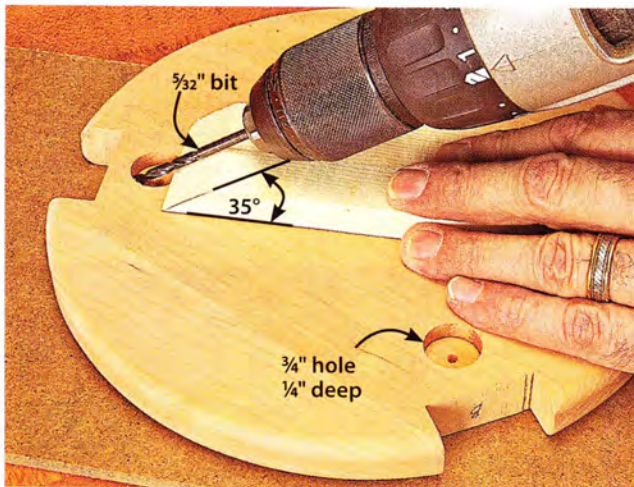
How to cut more accurate miters and bevels



Before bevel-cutting or mitering project parts, check the accuracy of your blade or miter-gauge setup by cutting a test box or frame to ensure that all four corners come together with no gaps. A miter-gauge extension that reaches past the blade, *above*, backs up the cut to prevent chip-out. For identical-length pieces, fasten a stopblock to the extension using double-faced tape.

—from the **WOOD** shop

How to pocket-screw without a jig



For some joints, you can pocket-screw the parts together even if you don't own a pocket-hole jig. For example, when attaching legs to a tabletop, avoid screw holes on the faces of the legs by pocket-screwing from the back. Here's a way to do it.

First, with a Forstner bit, drill $\frac{3}{4}$ " holes $\frac{1}{4}$ " deep in the bottom of the tabletop, where shown at *left*. Then, placing the tip of a $\frac{5}{32}$ " bit in the corner of each hole, drill a shank hole at a 35° angle. To guide the bit, bandsaw a bevel on a piece of scrap, as shown at *left*. At assembly time, use the shank holes as guides to drill pilot holes into the legs. Then fasten the tabletop to the legs with ordinary flathead wood screws.

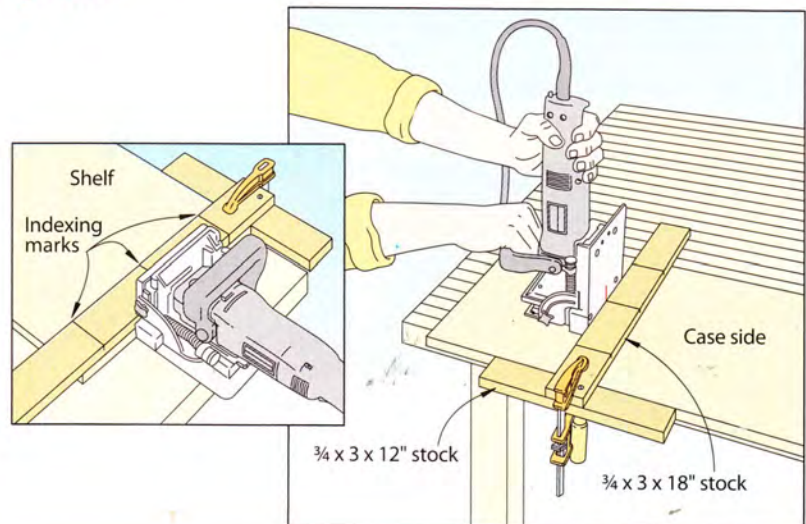
—from the **WOOD®** shop

Make bookcase biscuits a breeze every time

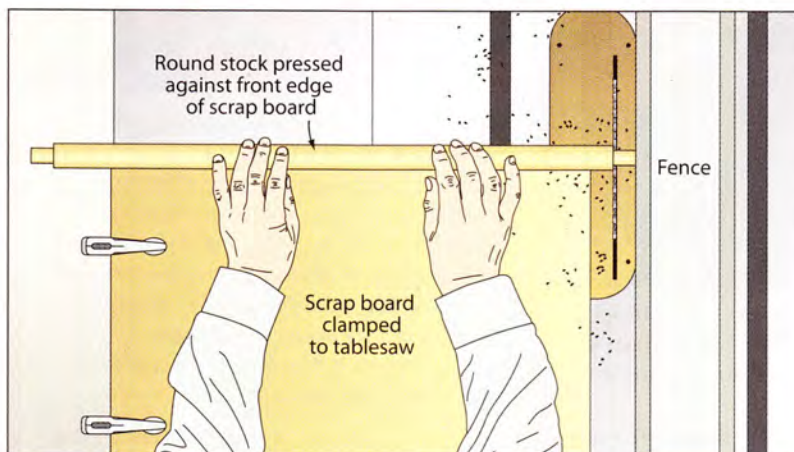
Transfer biscuit locations accurately from a case side to a shelf end using this custom T-square. Assemble it from medium-density fiberboard (MDF) or melamine-covered particleboard scraps to make pencil marks easy to erase. Mark the biscuit location centerlines on the long leg of the square.

To use the square, clamp it to a shelf, as shown *right*, with the short leg against the front edge, and use the lines to cut biscuit slots on the shelf ends. Then clamp the square to the case side with the short leg against the front edge. Using the same centerlines, cut slots on the inside face of each case side.

—from the **WOOD** shop



One curve you can cut on a tablesaw



How can you make a round tenon on a dowel or spindle if you don't own a lathe? You can use your tablesaw, as shown in the drawing at *left*.

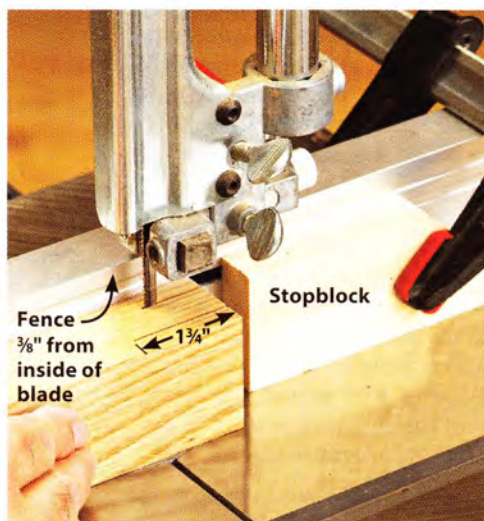
I first set up my rip fence to define the length of the tenon. Then, starting with the blade down and running, I hold the dowel into the crotch formed between the scrap board and the tablesaw top, and raise the blade slowly to create the shoulder depth of the tenon. Finally, I rotate the dowel to complete the shoulder cut and then nibble away to the end of the tenon by passing the dowel back and forth across the blade.

—Robert Shillinglaw, Ames, Iowa

How to safely cut a notch into the end of a long part

Using your tablesaw to cut a notch into the ends of lengthy workpieces such as a chair leg, can be awkward and dangerous. Here's an easy and safe way to do it using your bandsaw.

To form centered notches $1\frac{3}{4}$ " deep in the bottom end of a workpiece, position your fence $\frac{3}{8}$ " from the inside of the blade, and set a stopblock for the $1\frac{3}{4}$ "-long cut. With one face of the piece tight against the fence, make a cut to form one face of the notch, rotate the leg 180° , and cut again, as shown at *near right*. Repeat for each piece. Then, to remove the waste, move the fence approximately $\frac{1}{8}$ " farther away from the blade. Make a cut, rotate the piece, and cut again. Repeat for each piece.



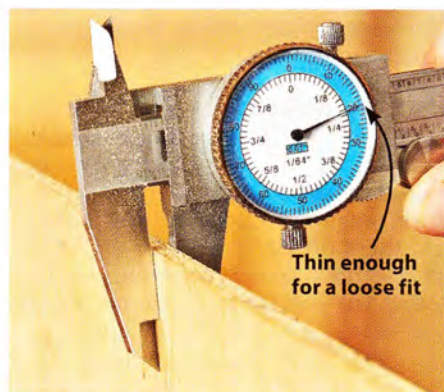
Continue the shift-and-cut process to kerf the remaining waste. Now, using a sharp chisel, chip out the waste, as

shown *below*, alternately working from the edges to the center.

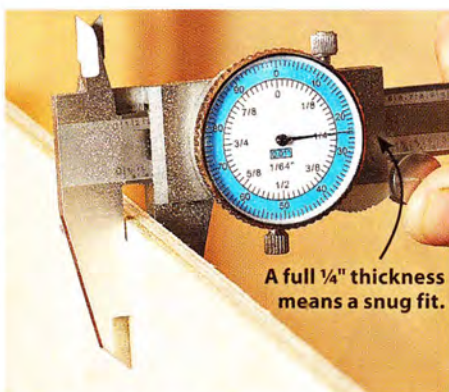
—from the **WOOD®** shop



For grooves that fit, check drawer-bottom stock



Not all sheet goods sold as $\frac{1}{4}$ " stock measure a true $\frac{1}{4}$ " thick. If, for example, you don't discover that until after you cut the grooves for $\frac{1}{4}$ "-thick drawer bottoms, the rattle coming from your finished drawers will serve as a constant reminder. The lauan plywood *above left* measures close to $\frac{13}{64}$ ",



thin enough to fit loosely. Even today's hardboard sheets measure too thin for a tight fit. The Baltic birch plywood, *above*, comes closer to a true $\frac{1}{4}$ ", although it's typically manufactured in metric dimensions ($\frac{1}{4}$ " equals 6.35mm). For another source of $\frac{1}{4}$ "-thick drawer-bottom stock, try MDF-core plywood.

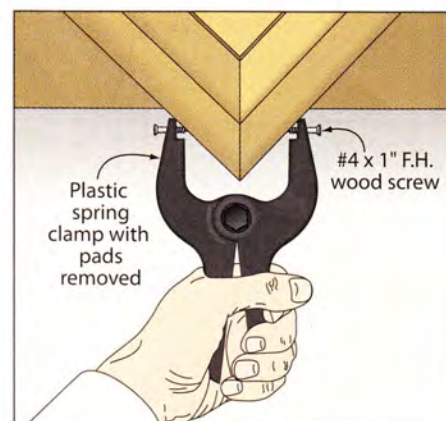
—from the **WOOD** shop

World's most economical corner clamps

Rather than buy a specialty clamp set for mitered corners, you can make your own like I did. Simply take some inexpensive plastic spring clamps, remove the pads, and drill holes to accept #4x1" flathead wood screws.

To clamp up a mitered corner, drive the screws through the clamp so the tips will just bite into the wood, and clamp the joint as shown. Driving the screws a little further ensures that the clamp won't slip.

—Mike Radcliff, Nashville, Tenn.



Cut wide-stock miters without tilting your blade

When I found myself making a lot of memorial flag cases, I needed a method to cut 45° miters quickly and accurately in wide stock. The sled I came up with lets me make miters in no time at all without even tilting my saw blade. And, it does it without causing tear-out on the workpiece.

After cutting the sled base slightly oversize, tilt your blade to 45° to cut the bevel on the sled base. Then, with the blade returned to the 90° position, insert the miter-slot guide into your tablesaw's miter slot, position the sled base against the blade body to ensure that it is square. Then, fasten the base to the miter-slot guide. Using the bevel of the sled base as a guide, mount the 45° wedges in place.

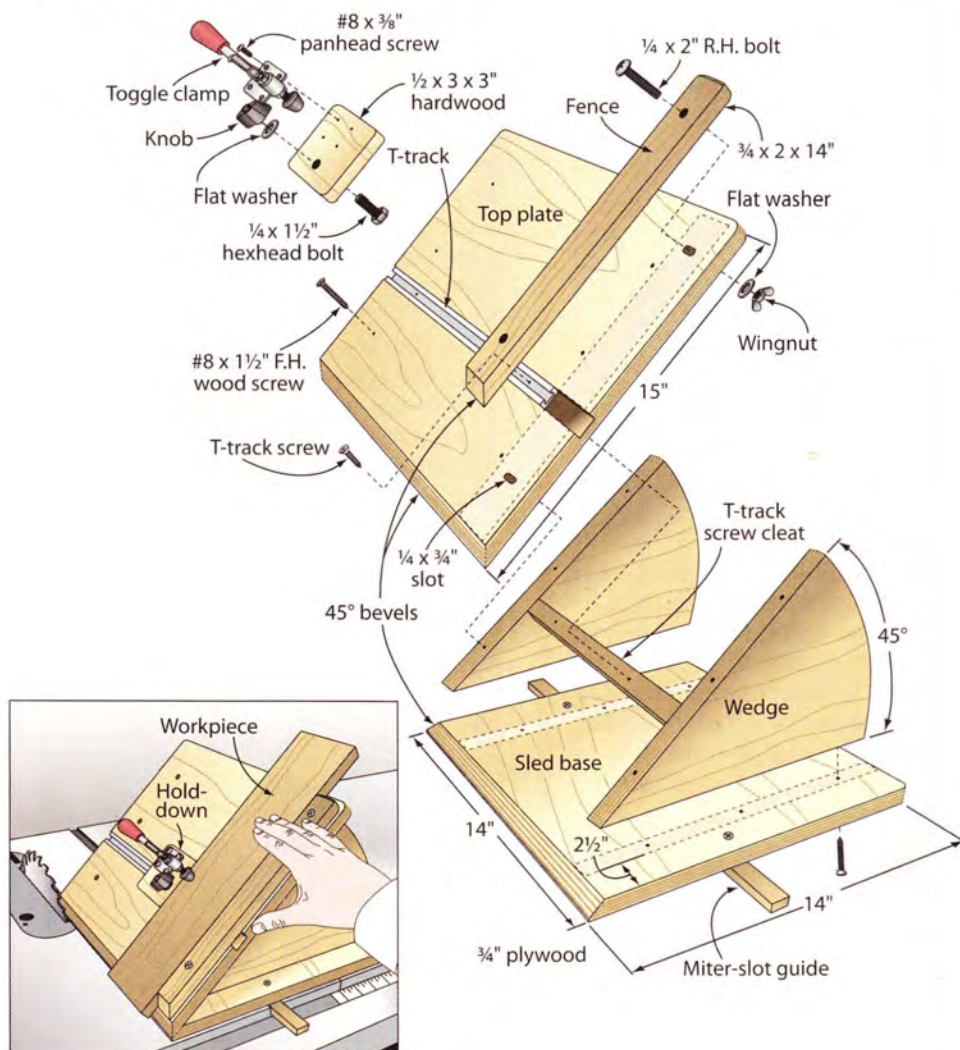
Cut a groove in the oversize top plate and mount the T-track and

T-track screw cleat, as shown. The cleat provides holding power for the T-track screws. Attach the fence to the top plate, ensuring that it is square by using the slots in the top plate for adjustment. Then, attach the top plate to the wedges, sliding it down until the edge touches the tablesaw table. With the blade still set at 90°, cut off the excess.

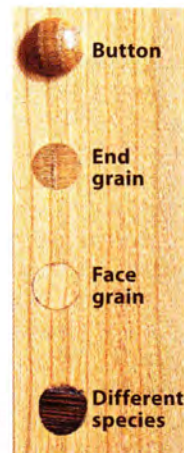
Finally, assemble and attach the hold-down that will secure the workpiece against the fence and keep it from slipping toward the blade.

Besides accurate miter cuts, the sled has an added benefit. Simply turn the workpiece over and adjust the blade height, and the sled can be used to cut the slots for a splined miter joint.

—Joy Wood, Winchester, Ill.



4 ways to dress up (or play down) screw holes



Wooden plugs both hide screw holes and add a decorative feature. Here are some of the options:

- **Buttons.** These mushroom-capped plugs have decorative domed tops that stand proud of the surface.
- **End-grain plugs.** Because you're not matching face grain to face grain, these plugs are more obvious. End-grain plugs can be cut from standard dowel, and require no special tools.
- **Face-grain plugs.** With careful grain matching, these hide holes best. Buy them premade. Or for best color match, cut them from scrap project stock using a plug cutter in a drill press.
- **Different-species plugs.** To really make a plug into a decorative element, try using plugs from contrasting species (walnut in oak, for example). For flush-fitting plugs, use a flush-cutting saw to trim them off (see *below*). Or use card stock with a hole in it over the plug to protect the surface and use any fine-tooth saw.

—from the **WOOD®** shop



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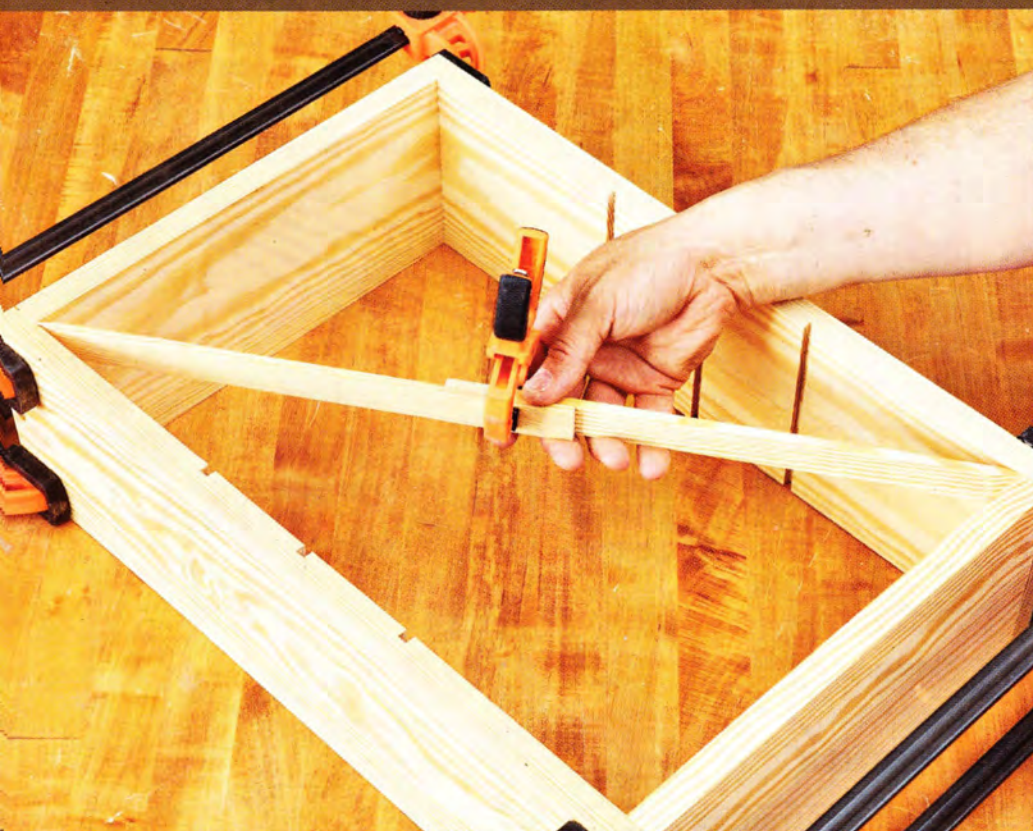
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Gluing, Clamping & Assembly

How to prevent a hinge-bound top

Ever hinge-mounted a top to a box and discovered that the top did not close flush? This can happen if you don't allow a tiny bit of space between the box and lid at the back when mounting the hinges. To easily create the needed clearance, insert business cards, which measure approximately .015" thick, between the top and bottom, clamp the parts together, and then mount the hinges.

—from the **WOOD** shop



A no-measure diagonal double-check

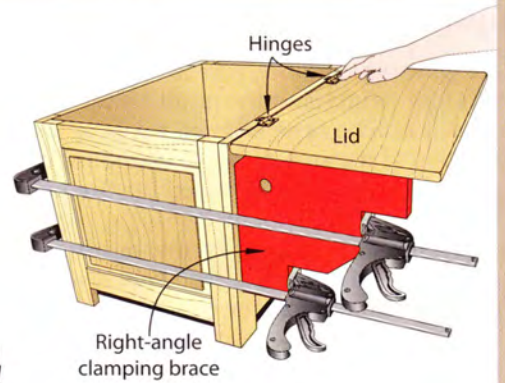
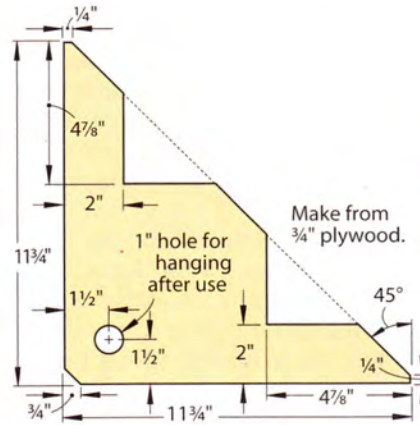
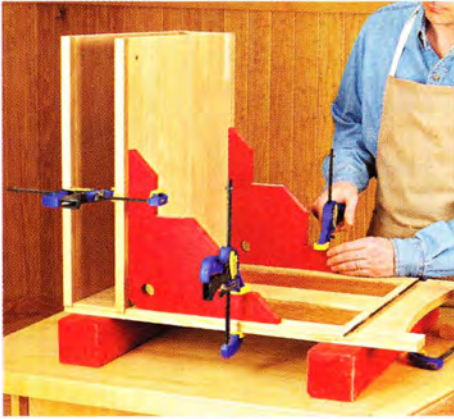
Even if you don't own a reliable square, you can still check for square by measuring between opposite corners on a project. If the diagonals measure the same—and the opposing sides are equal length—you know it's square. If clamps interfere with this measurement, or you're gluing up several identical assemblies, try this simple alternative. Cut two scrap strips, each a few inches longer than half the length of the diagonals. Then cut one tip of each strip to about a 30° angle. Hold the strips together with the angled ends in opposite corners and clamp them together. Using this as your gauge, measure the other diagonal to confirm a square glue-up. To equalize the distances, lightly clamp across the diagonal corners that are farther apart.

—from the **WOOD** shop



downloaded from www.cro-wood.com

Keep right angles right



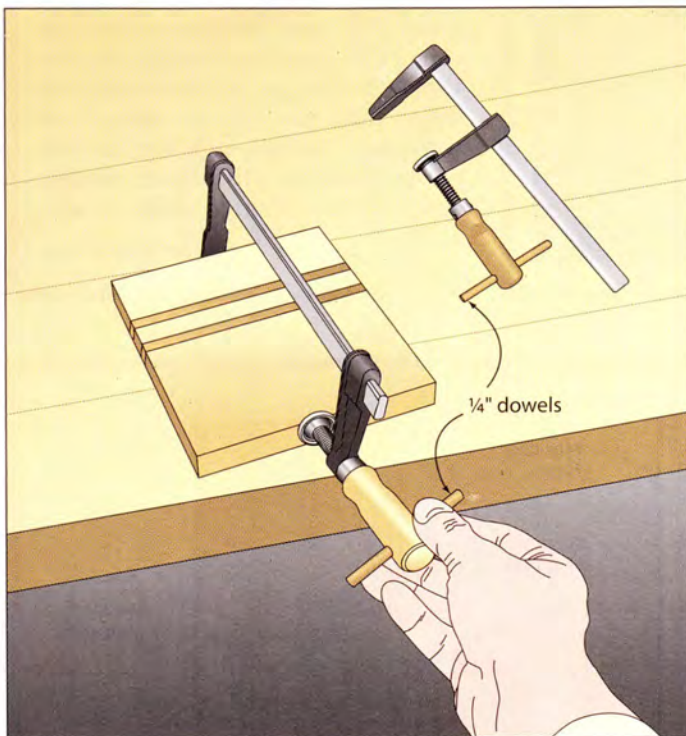
You'll never again guess the squareness of an assembly if you use these right-angle clamping braces to ensure true 90° alignment. For each pair,

start with a 12" square of $\frac{3}{4}$ " Baltic-birch plywood and cut it in half diagonally. Then cut notches for the clamps, *above*. You can vary sizes to

suit larger or smaller projects. The braces help with more than glue-ups. Clamp a pair to a chest, *above*, to support the lid as you install hinges.

—from the **WOOD®** shop

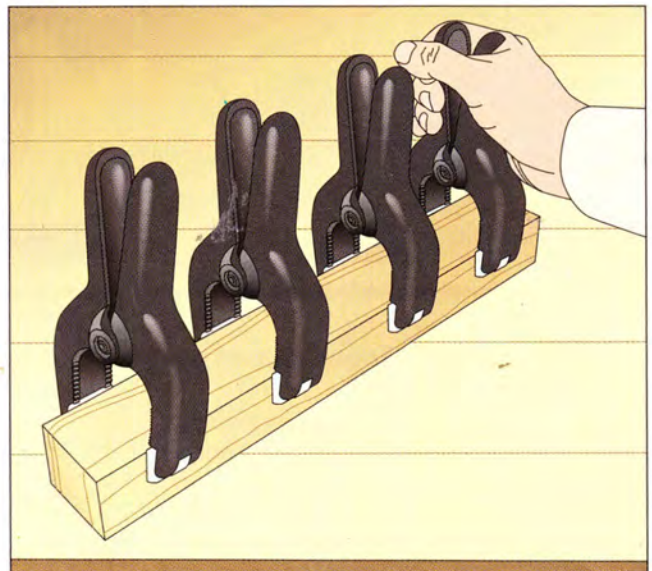
Add some torque to your clamps



When overtightened, small clamps occasionally freeze up, requiring extra torque to loosen them. So I applied the force of my mind to the problem. I simply drilled $\frac{1}{4}$ " holes in the handles of my clamps and glued in short dowels. Now I've got leverage and better control on the clamping pressure.

—Kenneth Gibbs, Schellsburg, Pa.

Put some extra spring in your grip



Often when you need to place a spring clamp, you only have one hand to spare. But I often find it difficult to open spring clamps one-handed. The solution: Before starting a glue-up, I use both hands to place the required number of clamps on a scrap of wood. With the clamps near their maximum capacity, as shown *above*, they are much easier to use one-handed.

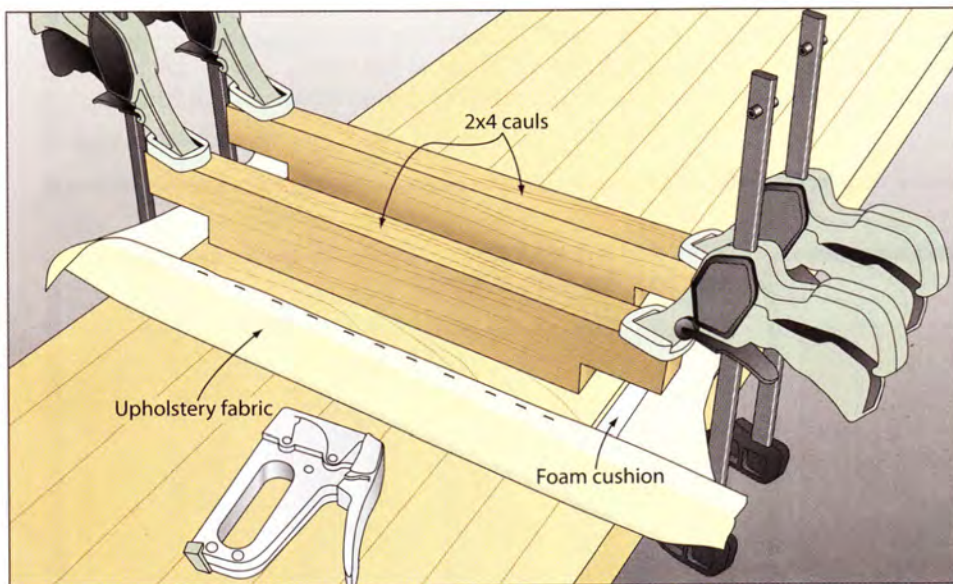
—Len Urban, Rancho Mirage, Calif.

Clamping cauls help you upholster seat cushions

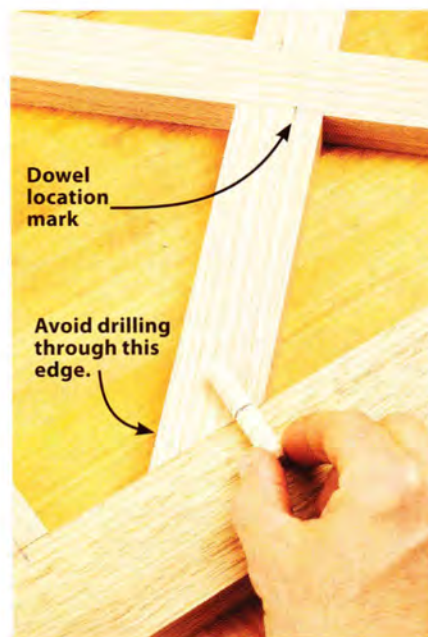
Compressing upholstery foam while stapling fabric in place seems to call for at least four hands, and the result always seems to be a wrinkled mess. To make it easier, I notched the ends of a pair of 2x4s just longer than the length of my plywood seat panel to make clamping cauls. With the foam centered on the fabric and the panel centered on the upholstery foam, I used four clamps to compress the foam about 1 1/4".

To compress the foam evenly, measure at each end of the panel from the top of the seat panel to the workbench top until the distances match. Draw the fabric tight and staple the two sides running parallel to the cauls, as well as both ends at their centers. Release the cauls, then staple the fabric at each corner and trim the excess. When you release the compression, the foam will spring back and draw the fabric tight.

—Bob Wilson, Urbandale, Iowa



Double-check dowels



A fraction of an inch can make the difference between a dowel hole that does the job and one that pokes through one edge at a mitered corner. To avoid problems, mark the center of a dowel and hold it in position over the joint. Reposition the dowel until you have at least 1/4" of workpiece beyond each end of the dowel. Then mark the dowel location across the joint using a sharp pencil.

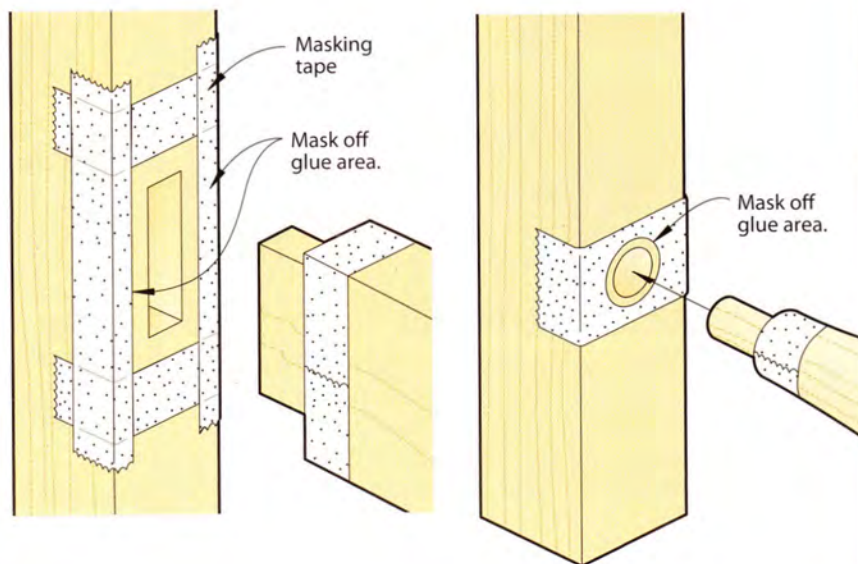
—from the **WOOD**® shop

Keep glue smears from marring joints

Glue kerfs solve face-to-face glue-up problems, but mortise-and-tenon joints require another strategy. For joints like the one shown at *right*, dry-assemble the joint, and tape the mortised piece around the tenon piece using masking tape or painter's tape. Then tape the tenon part next to the joint. Glue, assemble, and clamp the joint, making sure no squeeze-out drips off the tape.

For dowel tenons in round holes, first tape over the mortise and cut away the tape over the hole, as shown *far right*. Insert the dowel or round tenon, and tape where it meets the surface of the mortised piece. Then glue and assemble the joint. In both instances, wipe off glue squeeze-out with a damp rag. Then remove the tape before the glue dries.

—from the **WOOD** shop

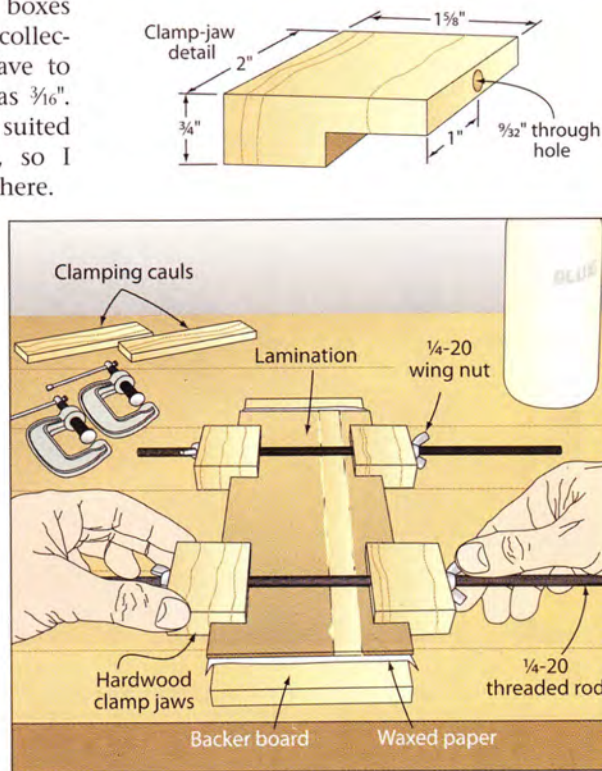


Diminutive clamps for delicate glue-ups

I make small, decorative boxes to hold coin and stamp collections, so I frequently have to edge-glue wood as thin as $\frac{3}{16}$ ". My larger clamps aren't suited to this delicate process, so I made the clamps you see here.

The threaded rod and wing nuts give me fine control that lets me carefully control the pressure. I keep small scrapwood clamping cauls and C-clamps on hand. If the workpiece starts to bow as I apply pressure, I simply clamp the cauls on top with a backer board beneath, separating them from the workpiece with waxed paper.

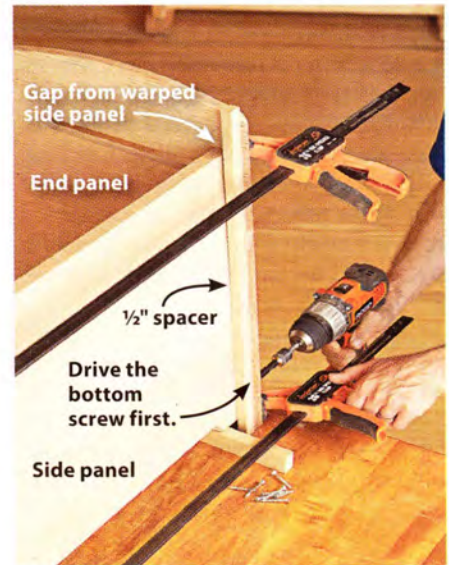
—Merlin Lafferty, Sebring, Fla.



Learn more about gluing and clamping at:
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Flatten panels as you assemble them



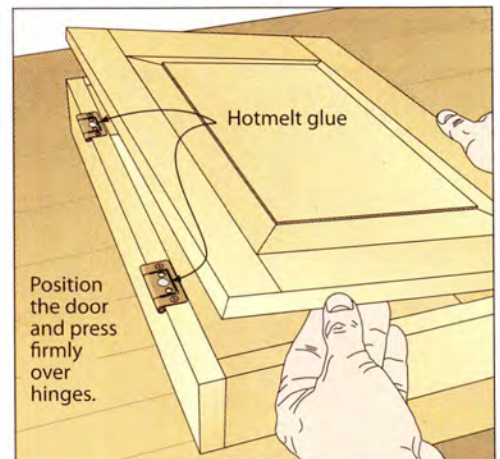
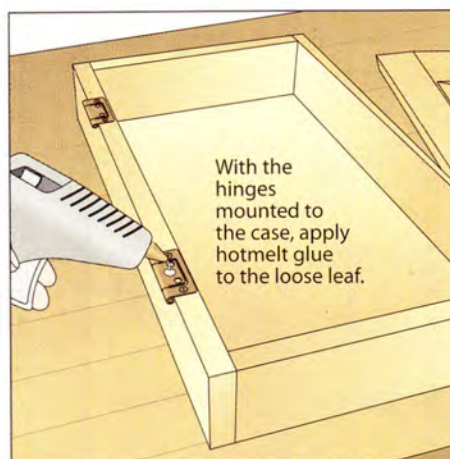
Even the most carefully edge-glued panel can warp slightly, but you can pull it back into shape during assembly. In the example shown above, a side panel warped inward near the top. To straighten it, the side panel was screwed in place at the bottom while leaving a gap at the top between the panel and the spacer. The panel was then pulled snug against the spacer and the second screw was driven in. The remaining screws were driven in until the panel fit tightly against the spacer at the top.

—from the WOOD® shop

A hot tip to hold hinges steady

I build quite a few wall clocks and other pieces that need smaller hinges, and it's always a challenge to align the door or lid perfectly with the box. For foolproof alignment, I apply a dab of hotmelt glue to the hinges using the technique shown at right. After just a few seconds, I can safely open the door, drill pilot holes, and install a couple of screws. Finally, I back the screws out, break the glue bond, scrape off the glue residue, and finish installing the hinges.

—Ronald Miller, McPherson, Kan.



Trap glue squeeze-out

Glue globs and surface smears will mar a finish, especially when you're applying stain. Stop the problem before it starts on face-to-face joints by cutting $\frac{1}{8}$ "-deep saw kerfs about $\frac{1}{8}$ " from both edges, where shown at *right*. Apply glue only between the kerfs and, as you press the two parts together, any squeeze-out will flow into the kerfs. If the ends will be visible in the completed project, use a $\frac{1}{8}$ " straight bit and a table-mounted router to make squeeze grooves.

—from the **WOOD**® shop



Keep screws on the tip with this trick



How many times have you tried to guide a screw on the end of your screwdriver into a mounting hole and had the screw fall off (and, as Murphy's Law would have it, roll out of sight)? Here's a simple way to avoid the frustration (and hunt). Transform your ordinary screwdriver into an "attractive" one by attaching a rare-earth magnet to it near the tip. A magnet as small as $\frac{1}{4}$ " in diameter provides plenty of pull to hold a screw securely to the tip, making positioning and driving the screw in any orientation or tight space a snap.

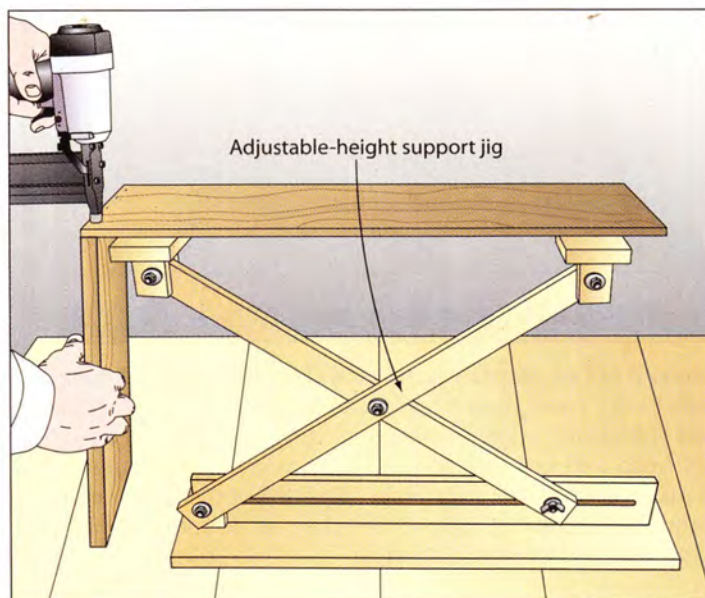
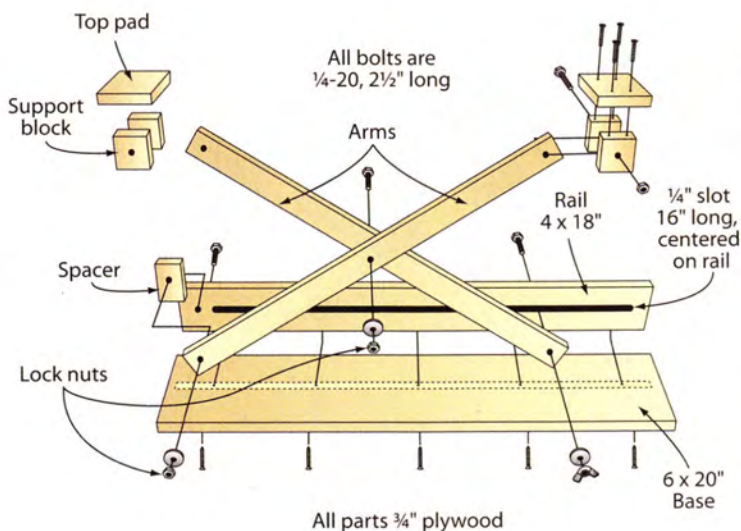
—from the **WOOD** shop

Scissor-lift support provides a third hand

This adjustable-height support serves as an extra hand. It's especially useful for joining two parts where clamps would get in the way. With the lock nuts just loose enough to allow

motion, the scissor action lets me adjust the support to the perfect height, and the wing nut locks it firmly in place.

—Charles Mak, Calgary, Alta.

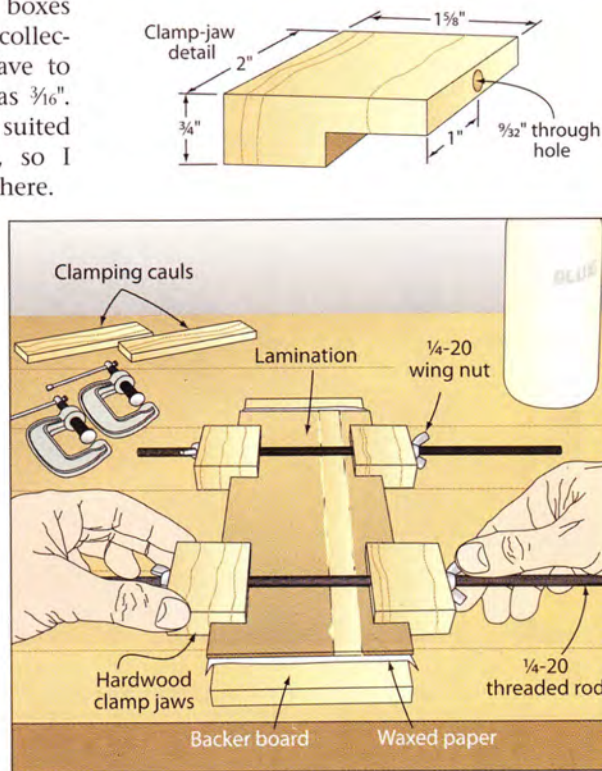


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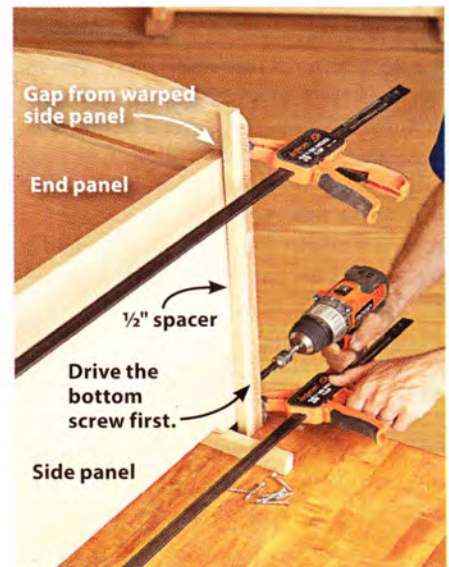
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—Merlin Lafferty, Sebring, Fla.



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—from the WOOD® shop

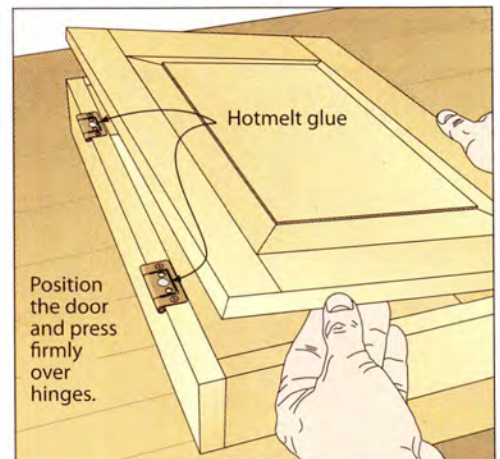
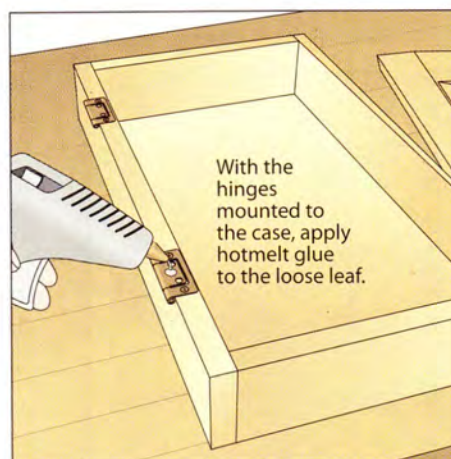
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—Ronald Miller, McPherson, Kan.

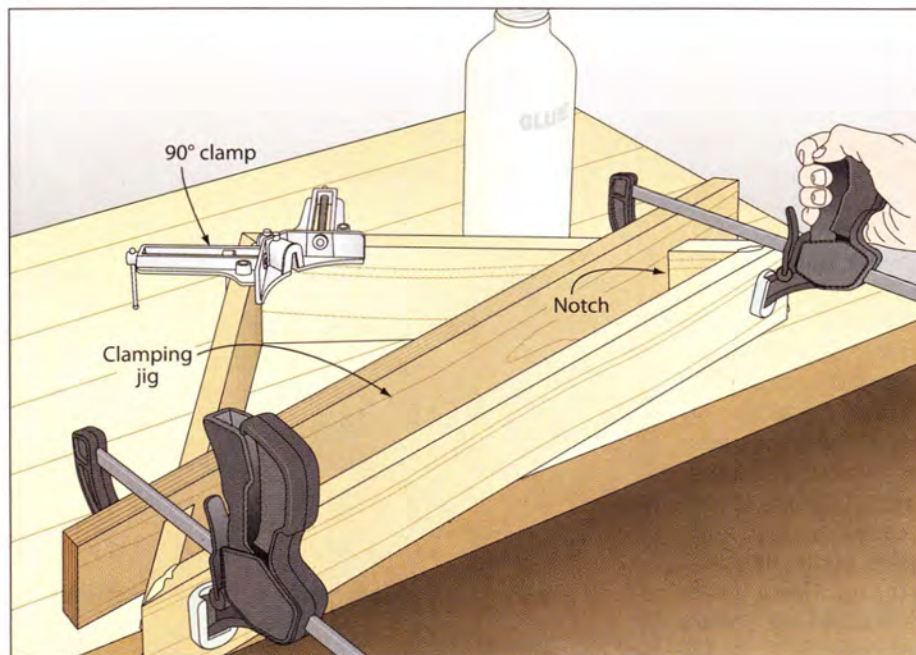


Slick trick for clamping corners

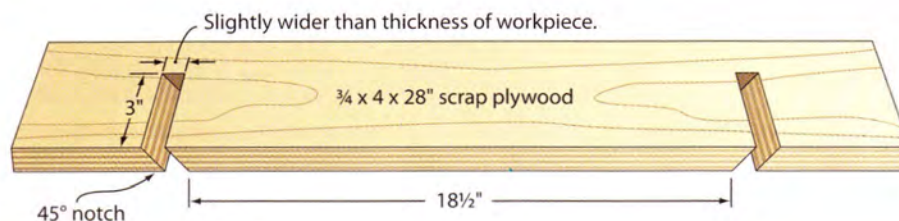
While making several memorial flag cases for my nephew's Marine Corps unit, I realized that gluing and clamping a 45° corner is not as easy as it seems. After a little thought, I came up with the solution you see here. Location of the angled notches isn't critical; simply set the scrap a couple of inches above the bottom piece on the dry-assembled flag case and then mark where the sides cross. I used my radial-arm saw to make the 3"-deep, 45° notches.

When you're ready to assemble, use a standard 90° clamp on the square corner. For the bottom angles, slide the clamping jig over the sides and clamp, as shown. If you use biscuits or splines in the joints, you won't have to worry about the corners slipping.

—Ray Girard, Gainesville, Fla.



Download a free project plan
for a flag case at:
woodmagazine.com/flagcaseplan

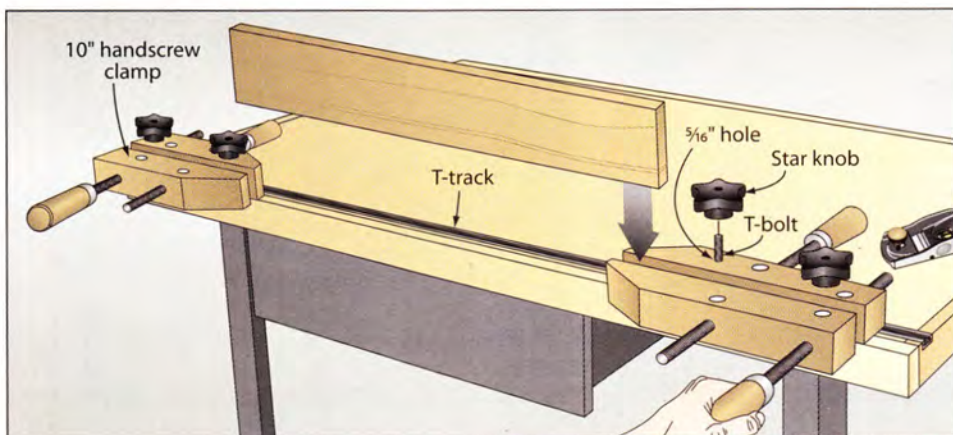


Budget-Minded bench vise

I wanted a vise on my secondary workbench, but didn't want to pony up the cash for another heavy-duty one like on my main workbench. So I built this low-dough bench clamping system to hold oversize boards. After installing T-track near the edge of my

bench, I drilled holes through 10" handscrew clamps, where shown below, to accommodate 1/4x2 1/2" T-bolts. The star knobs lock the clamps along the T-track to accommodate different board widths and lengths.

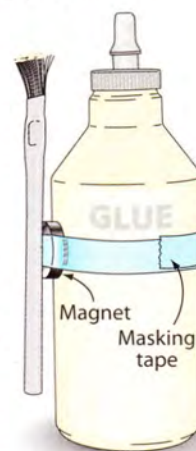
—Ken Minnaert, Olympia, Wash.



Magnet and tape affix glue brush

I use disposable metal-handled brushes to spread glue on woodworking joints, but I always seem to knock the brush off the bench and into the sawdust at the worst possible times. My solution: Tape a small magnet to the glue bottle with masking tape. The brush can't roll away, and the bristles stay clean of debris.

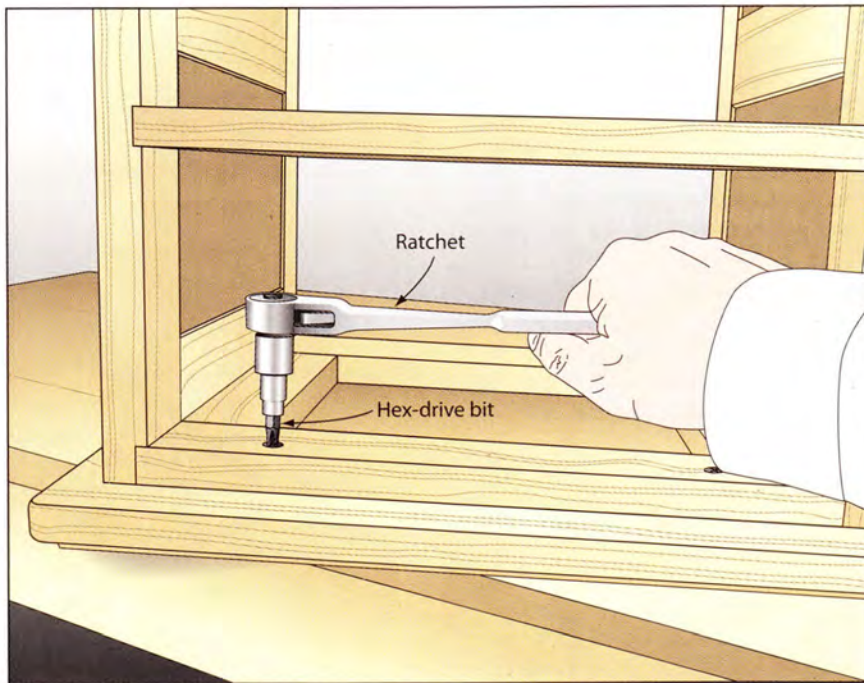
—James Sullivan,
Washington, N.C.



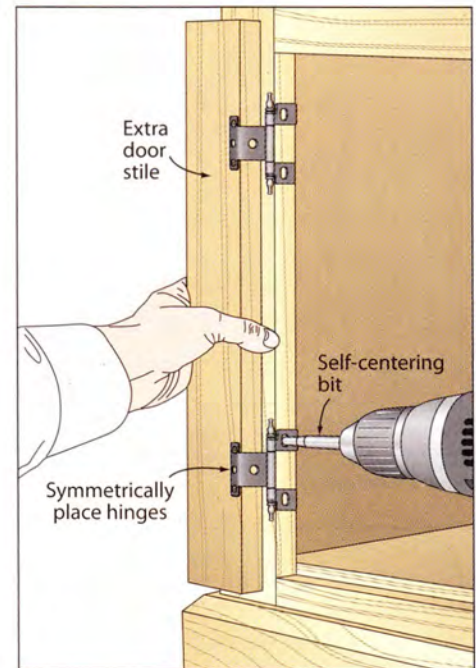
A right-angle driver at a just-right price: free

If you've ever priced a right-angle screw gun, you know it's a lot of money for a tool most of us won't use very often. Fortunately, all of those hex-drive bits fit snugly into a $\frac{1}{4}$ " socket, meaning the ratchet you probably already own serves as a solid substitute when you need to drive a screw in a tight spot.

—Robert Erwin, North Port, Fla.



Mount doors simply with singular stile



One of my biggest challenges has always been the installation of cabinet doors. Keeping an awkward door aligned and in place with one hand while drilling with the other drove me half nuts.

My solution: Cut an extra stile when making the door parts. I use the extra stile to align the hinges on the cabinet frame and drill pilot holes as shown. Further, if the hinge locations are symmetrical, I can flip it around and use it for both left and right door installations.

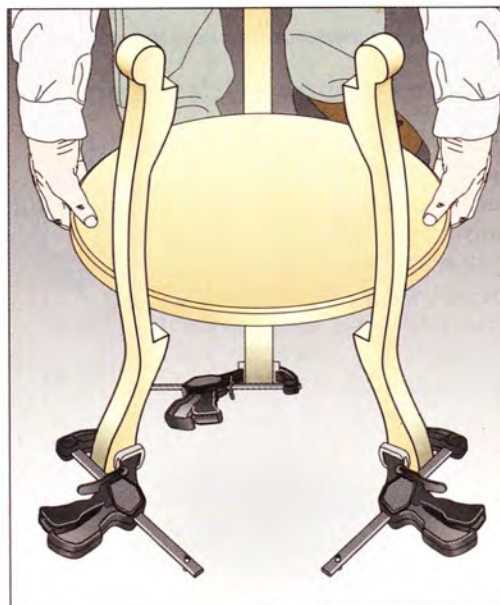
Even overlay doors can be aligned this way before drilling because the stile can be closed against the frame for measuring. And there is usually still room to look past it and get a drill around it.

—Mike Harman, Great Mills, Md.

Temporary feet make up for too few hands

My wife and I make crafts to sell at fairs and festivals. Recently, we decided to branch out with this three-legged table design, but even with two sets of hands, we found it difficult to hold the legs upright while placing the tabletop and shelves. My wife hit on the idea of using bar clamps at the base of the legs as temporary supports. It was like having extra hands to help us.

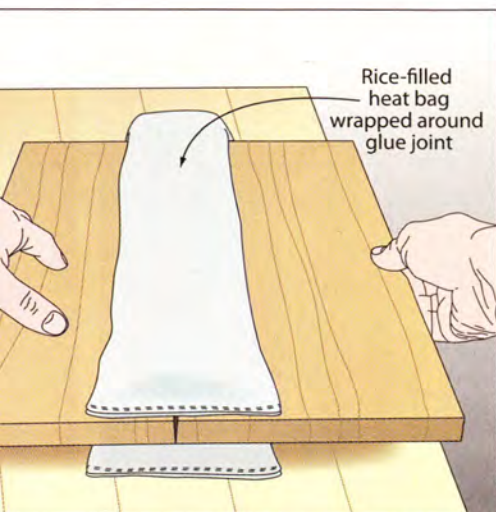
—Rev. and Mrs. Frank Ingram, Gibson, N.C.



Download several free charts including a glue chart at:
woodmagazine.com/charts



Put heat to work to loosen glue joints



I had to take apart an edge-glued panel because of a mistake. Unfortunately, modern wood glues hold so tenaciously that the wood breaks before the glue joint. The solution my wife gave me was a bit less drastic than splintering the panel or cutting out the joint.

She loaned me a heat bag that she uses for sore muscles—a small cloth bag she made from a pillowcase and filled with 3 or 4 pounds of rice. At her suggestion, I heated it in the microwave to the point it was almost too hot to handle. I then wrapped the glue joint in the hot bag for about 15 minutes. The heat softened the glue, and the joint then came apart easily without any damage to the wood.

—Richard Harris, Middletown, R.I.

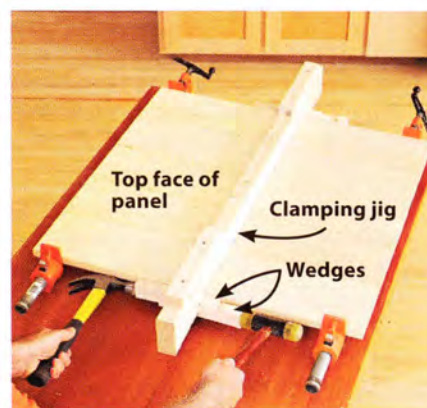
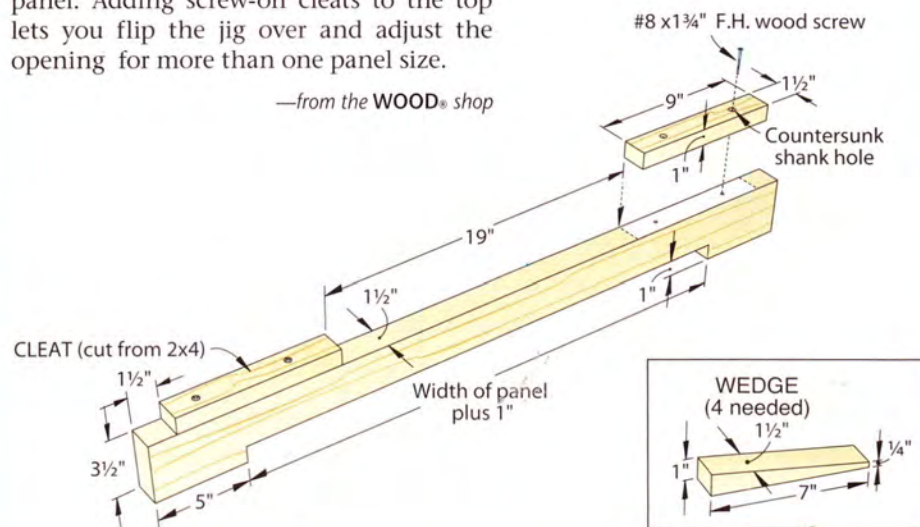
Make panel glue-ups a snap with this trick

You don't need an arsenal of clamps to form flat edge-glued panels. You can do it using just two clamps (inexpensive pipe clamps work great) and an easy-to-make jig. Here's how.

Begin by cutting the clamping jig and four wedges, shown *below*, from a 2×4. (We jigsawed the wedges to shape.) Lay out and cut the opening in the bottom of the jig to shape. (The openings at the bottom and between the cleats at the top are sized to fit the boards shown plus the wedges.) Now, glue and clamp the boards together with the top faces flush, center the opening in the jig across the panels, and drive a pair of wedges between the jig and panel at each end, as shown *top right*.

To accommodate different-size panels, size the jig opening 1" wider than the panel. Adding screw-on cleats to the top lets you flip the jig over and adjust the opening for more than one panel size.

—from the **WOOD**® shop



Space your slides with scrap

To accurately space drawer slides on both sides of a case, use a panel scrap. Start by cutting a scrap spacer for mounting the widest slides. Drill mounting-screw holes, and attach the slides, as shown *right*. If the next group of slides is spaced differently, crosscut the spacer to the necessary length and repeat.

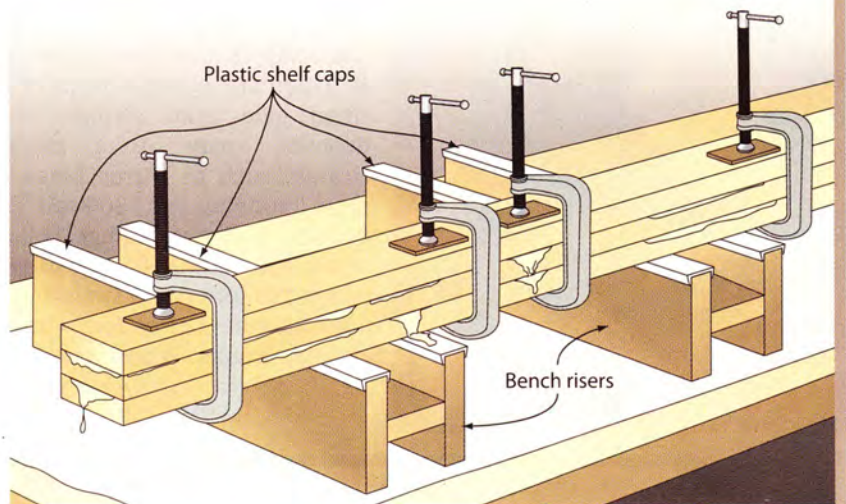
—from the **WOOD** shop



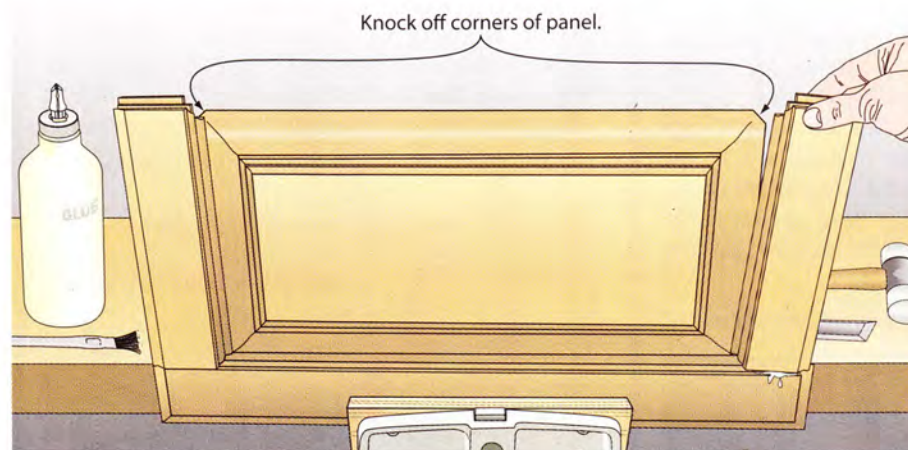
Keep it clean with glue-edge guards and clamp-caul cappers

I used a magazine project plan to make a set of bench risers for gluing parts together, such as laminating boards as shown *at right*. To keep excess glue from dribbling onto the risers, I added one improvement: plastic, U-channel shelf caps from the hardware store. Because they're made to conceal particleboard shelving edges, they fit $\frac{3}{4}$ " stock perfectly. They protect the risers from messy glue-ups so well, I went ahead and added them to my collection of clamping cauls.

—Serge Duclos, Delson, Que.



Cutting corners pays off for panels



After a raised-panel split in a cabinet door, I performed an autopsy to see what caused the failure. It turns out some glue squeeze-out froze the solid-wood panel corners, preventing the panel from contracting without splitting.

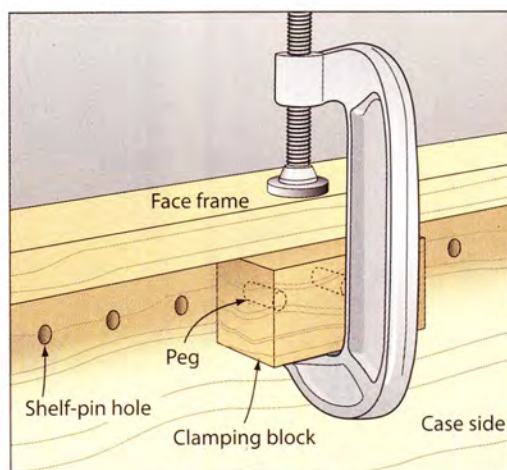
Now, before I glue up my raised-panel doors, I always knock off the corners of the panel with a chisel—just $\frac{1}{4}$ " or so to make sure it stays hidden. I've had no more split doors since I started doing this because any squeeze-out can't reach the panel's corners.

—John Hammen, Kaukauna, Wis.

Running tight on clamps? Add pegs

With bar clamps running short on a cabinet job, I needed a good way to secure the face frames to the carcass. So I improvised, making a pegged block that fit into the shelf-pin holes in the case interior. Then, I used a C-clamp to force a tight glue joint between the frame and the case side.

—Daryl Sullivan, Cedar Falls, Iowa



Size up your MDF before you glue

Medium-density fiberboard's porous edges—in sharp contrast to its slick, heat-treated faces—drink up glue like a marathoner gulps water. To ensure you're getting the proper amount of glue on a joint, particularly when using no additional fasteners, first "size" the edges by smearing an even coat of wood glue on the entire MDF edge. Let it sit for 10 minutes. Apply another coat of glue over the first, and then clamp the trim to the MDF.

—from the **WOOD®** shop

Curing glue-clogged clamps



No matter how much care you take, glue squeeze-out inevitably drips onto your clamps and dries before you spot it. There are a couple ways to remove dried glue from clamps. For thin deposits, spray on a citrus-based cleaner, such as Citrus Magic (Beaumont Products, Inc., 800-451-7096) or Polyken 41 Citrus Cleaner (Hillas Packaging, 800-952-7424, www.hillas.com.) Allow it to soften and swell the glue for a few minutes before removing it with a plastic scraper. When you're finished,

use detergent and water to remove the cleaner. For more stubborn deposits, use a hair dryer or heat gun on the high setting to soften the glue before scraping it off, as shown at *left*.

Next time you use your clamps, adjust the clamp jaws during dry assembly, and then mask the bar between the jaws with painter's tape before gluing and clamping. Any drips will come off with the tape.

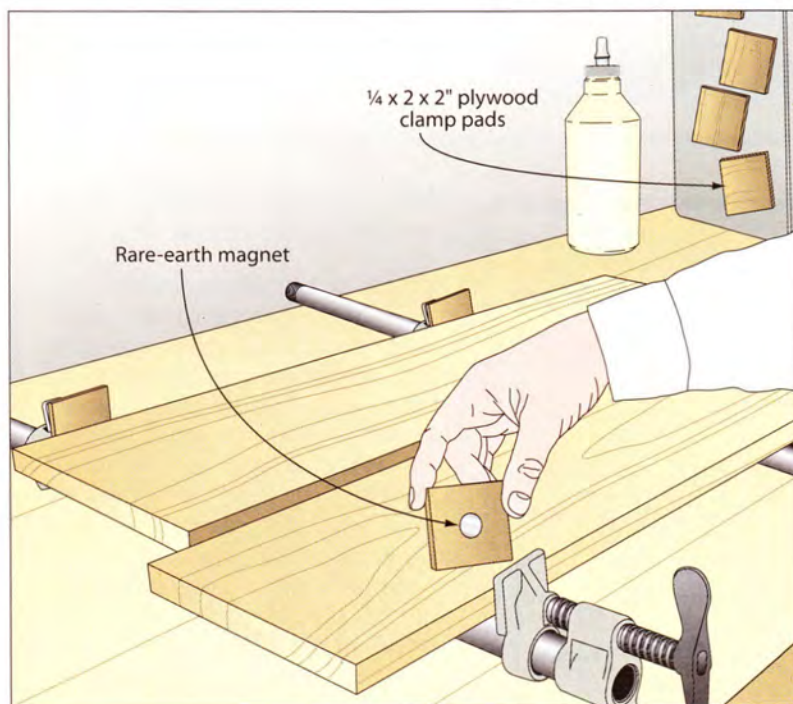
—from the **WOOD®** shop

Predictable pipe clamp pads

You can buy more expensive ones, but pipe clamps are still my "go-to" clamp for large glue-ups. But the Achilles heel of the pipe clamp has always been the challenge of keeping clamp pads in place while you position the jaws. While this task is bad enough for a horizontal glue-up, it's a real headache when gluing vertically. I finally solved the problem by creating the magnetic wooden pads shown *below*.

To make a batch of pads, start by cutting out 2" squares of $\frac{1}{4}$ " plywood. Next, drill a $\frac{1}{2}$ " hole $\frac{1}{8}$ " deep in the center of each pad. In the hole, epoxy a $\frac{1}{2}$ " rare-earth magnet ($\frac{1}{2} \times \frac{1}{8}$ " Craft Magnet, item no. ND031, \$.38 ea., Applied Magnets, 800-3796818 or magnet4less.com). The pads cling to your clamps' jaws, and you can store them on any steel surface in your shop.

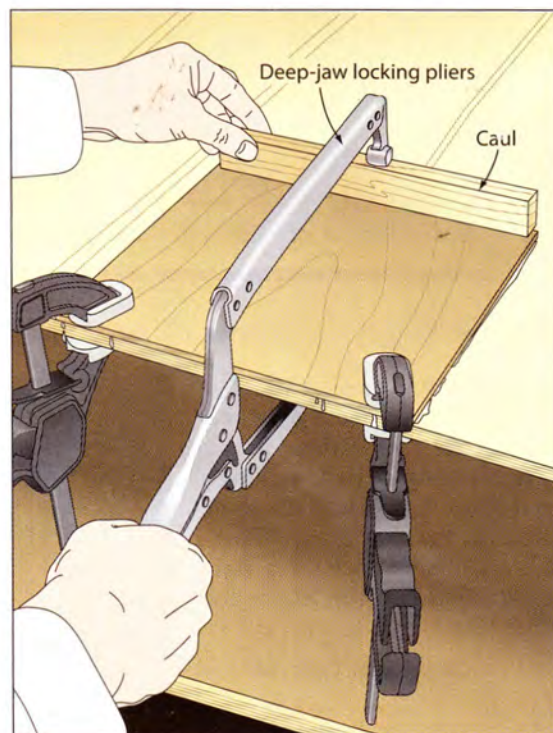
—Gordon English, Salt Spring Island, B.C.



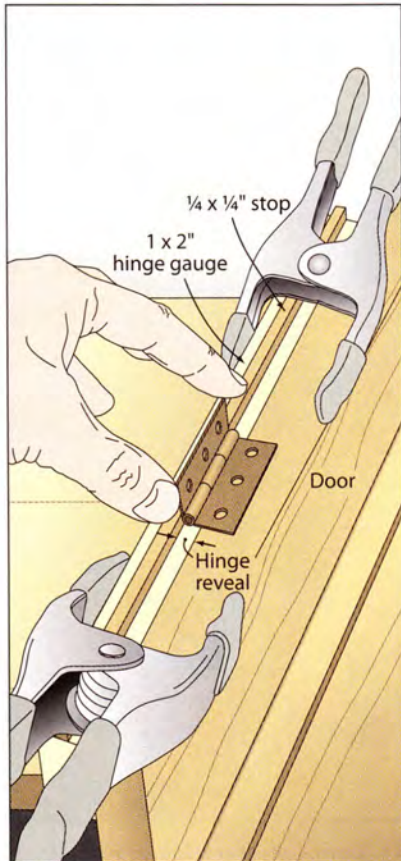
Metalworkers hold the key to deep clamping jobs

My last project, an entertainment center, had a part that was difficult to clamp due to its depth. None of my woodworking clamps had enough reach. So, I turned to my deep-jaw locking pliers. The jaws' 11" reach, with the aid of a clamping caul, distributed the pressure perfectly.

—Bob Kelland, St. John's, Newfoundland



Always reveal your butt hinges evenly



Installing butt hinges for inset doors while ensuring a consistent hinge exposure has always given me grief. This simple guide makes it easy, though. I made it out of a 1x2" strip of wood with a 1/4x1/4" stop strip glued to the edge, as shown at left. The location of the stop determines the reveal, or how much the hinge sticks out from the face frame. (I use 1/4".)

To put it to use, clamp the guide to the face frame and butt the hinge against the stop strip to position it for drilling. Once finished, do the same on the door. When you attach the doors to the frame, they will come out flush every time.

—Charles Paukert, Cedar Creek, Neb.

Yellow glue: It sizes up as a pre-prime sealer

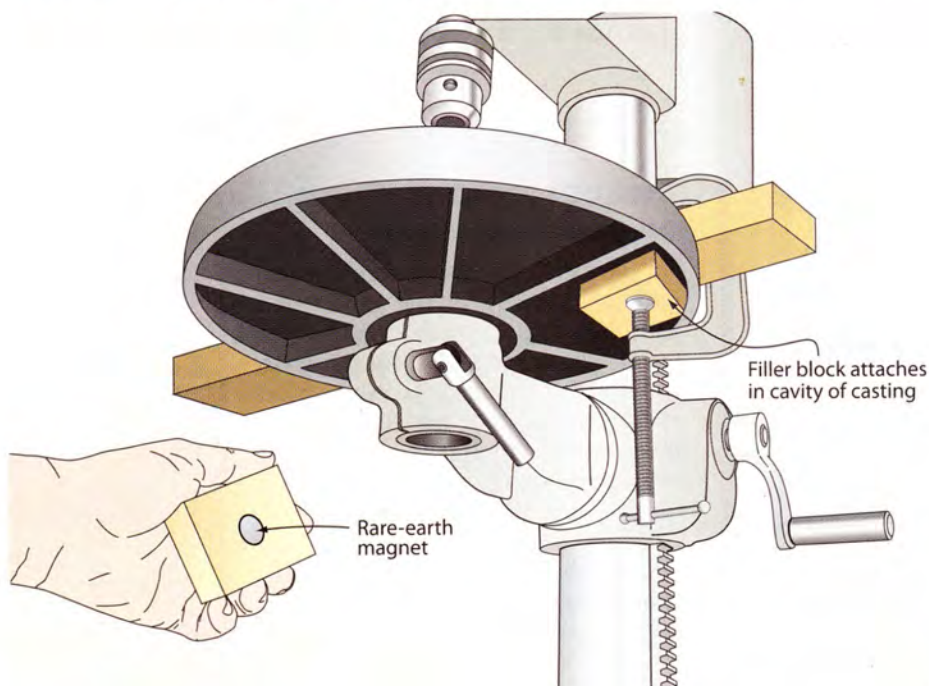


When you need to prime and paint a porous material, such as MDF, you can save a little time—and primer—by first sealing the parts with glue size (yellow glue thinned with water). The glue reduces absorption of the primer and avoids the need for a second coat. It also sands easier than primer.

To prepare the glue size, mix three parts of water with seven parts of glue. Apply the size with a foam brush, avoiding contact areas where you need to glue parts together. Let the glue dry overnight. Then sand the glue smooth, working from 150 to 220 grit. Remove the dust, then prime and paint.

—from the **WOOD**® shop

A stick-to-your ribs clamping solution



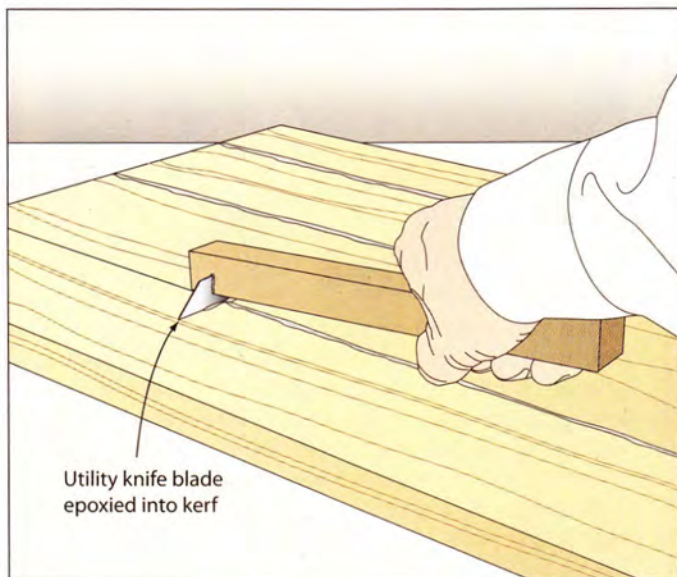
Here's a quick way to clamp jigs or fences to the undersides of ribbed cast-iron tables, such as those often found on drill presses. In a scrap of wood the same thickness as the recess in the bottom of your table, drill a counterbore and epoxy in a rare-earth magnet to create a filler block that stays put.

—Charles Mak, Calgary, Alta.

Make a slim scraper from scrap

Here's a quick, disposable scraper that works great for cleaning up glue squeeze-out. Bandsaw a ½"-deep kerf in a scrap-stock "handle" at approximately a 15° angle. Then epoxy a utility knife blade into the kerf.

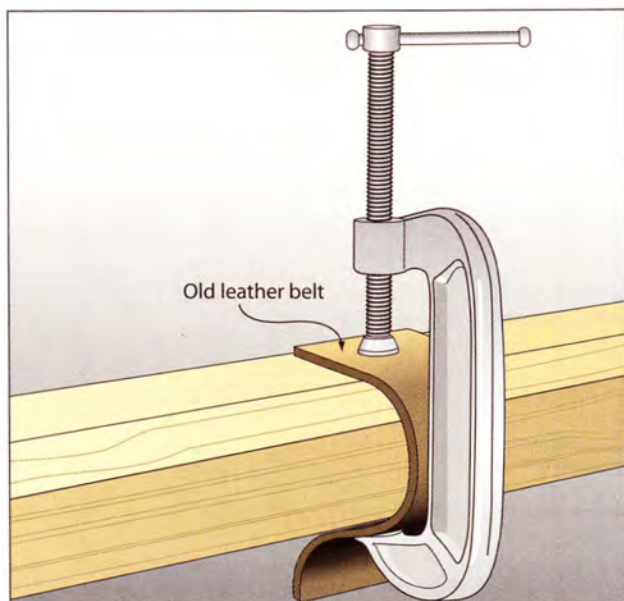
—Stan Liedman, Maple Grove, Minn.



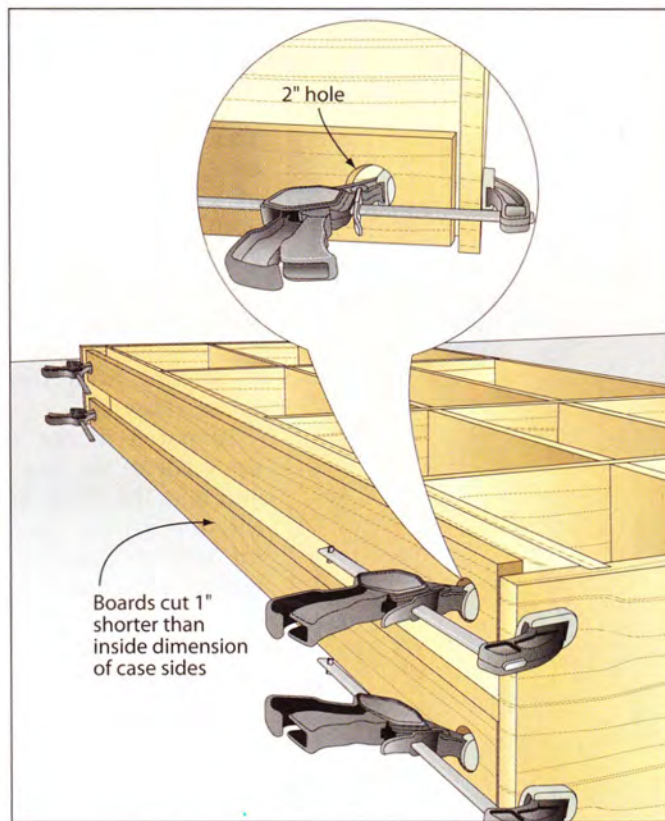
Accessorize your glue-ups with a leather belt

To prevent clamp-jaw mars in an otherwise perfect project, crosscut an old leather belt with a utility knife. Use the short leather strips as wraparound, one-piece clamp pads.

—Jack Reynolds, Boynton Beach, Fla.



Wood strips stretch your clamp dollars



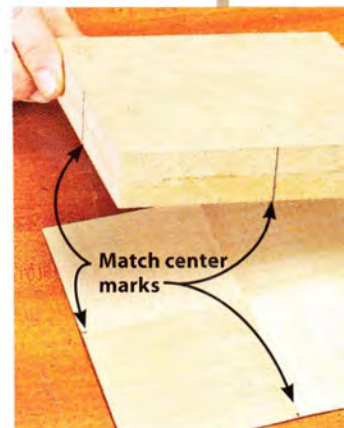
You can make your smaller clamps do the work of pricey, extra-long clamps that you won't use often. For example, when gluing side panels to a bookcase, cut scrap strips of plywood just shorter than the case side that you're clamping. Drill holes at the ends using a bit or holesaw large enough to accommodate the jaws of your smaller clamps. Then, use this as a clamp stretcher, as shown above.

—from the WOOD® shop

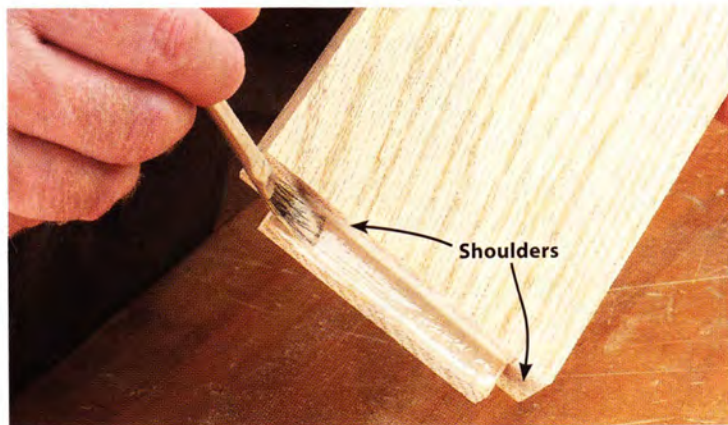
Center veneer patterns on your substrate

To position a four-piece veneer pattern precisely in the center of a substrate, begin by marking the center of all four edges of the substrate. If necessary, to make the seams more visible, mark where the veneer pieces meet. After applying glue to the substrate, match all of the center marks with the veneer seams, and hand-press the substrate against the veneer. Then, press the glue-up using clamps or a vacuum veneer press, taking care not to shift the veneer.

—from the WOOD® shop



Focus on faces and edges



Face grain and edge grain bond well when glued together, but end grain glued to anything lacks holding power. So don't waste glue (or precious open time) on end grain if you don't need to. For example, on this mortise-and-tenon joint, apply glue to the faces and edges of the tenon and mating mortise walls, but don't bother with the shoulders—it will just cause extra squeeze-out you'll have to clean up.

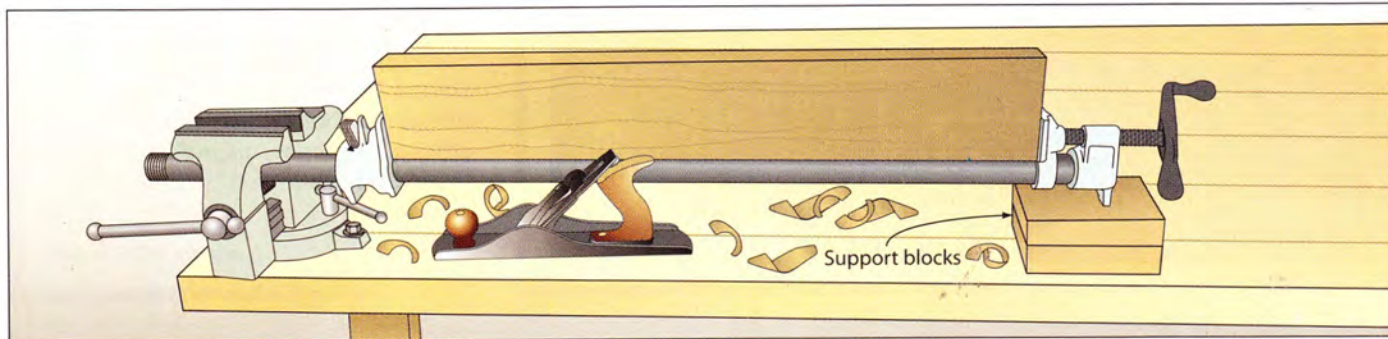
—from the **WOOD®** shop

Turn a machinist's vise into a tail vise

Here's a trick I came up with when I wanted to do some hand-jointing on a long workpiece: Secure one end of a long pipe clamp in your machinist's vise, prop up the screw end

of the clamp with support blocks, and clamp your work piece. This arrangement provides rigid support in only a few seconds, and gives you full access to the workpiece's top edge.

—Bill Wells, Olympia, Wash.

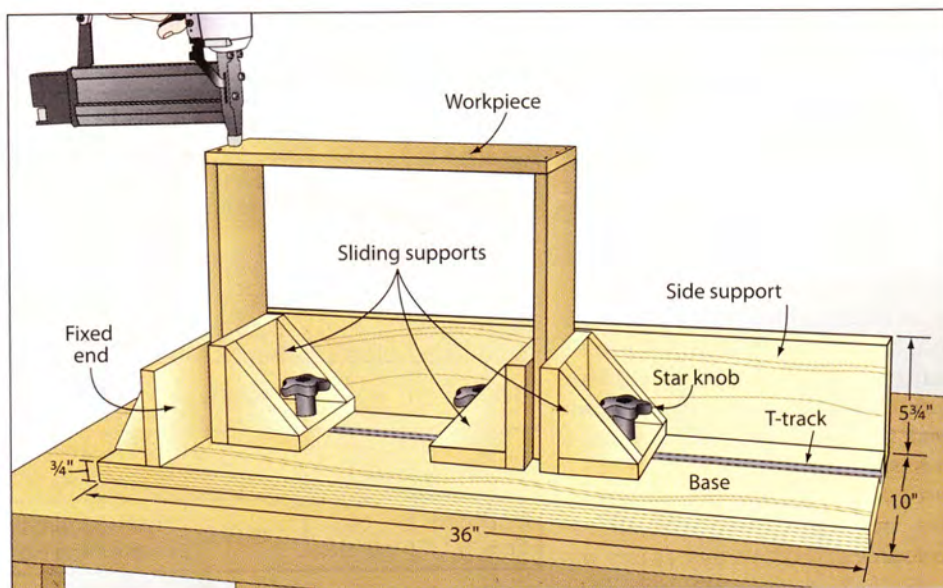


A sure-footed partner for unsteady nailing

Nailing drawer boxes together used to frustrate me as I tried to steady the wobbly parts while keeping them aligned and trying to drive a nail. This clamping jig adds stability to this ungainly process.

You can make the jig to whatever size best suits your needs, but the dimensions shown will accommodate very large and fairly small boxes. Build the jig from any type of scrap stock (I used plywood); you'll find the star knobs and T-tracks at woodworking supply stores.

—Lynn Lawrenz, Algoma, Wis.

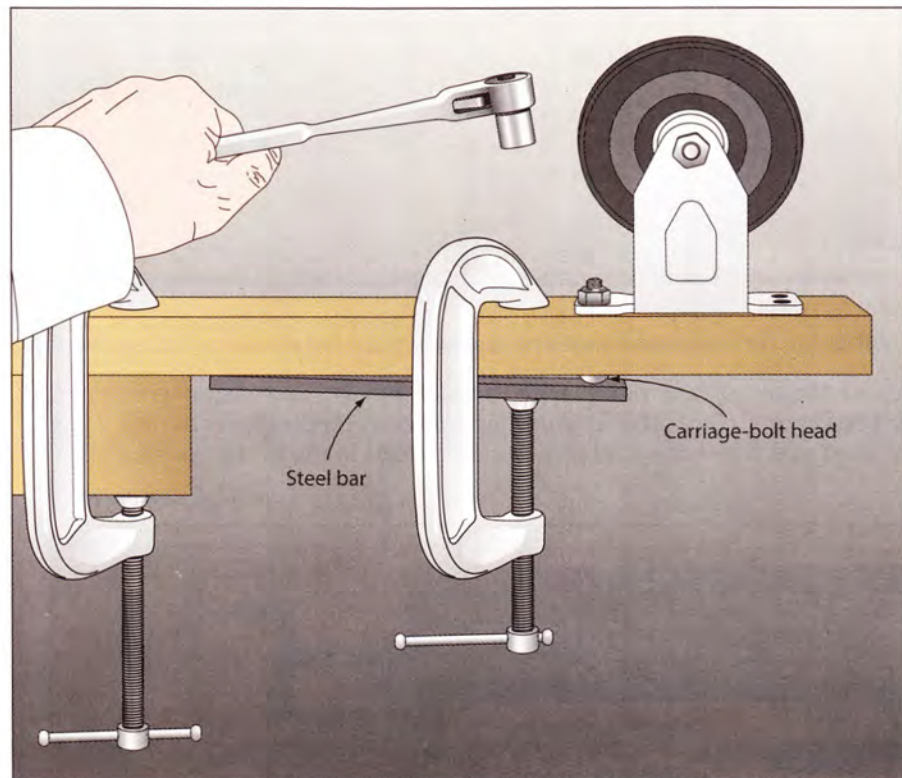


Carriage-bolt clencher

If you've ever had a carriage bolt slip when the square collar tears out the wood grain, here's a solution. Clamp a steel bar or a flat wrench (or a rasp if it's really stubborn) over the bolt

head, where shown. The friction on the head gives you enough grip to finish tightening or loosening the nut.

—Richard Wood, Appleton, Wis.



Drive screws after the glue dries



Trying to hold the brackets in place for a shelf or wall cabinet while drilling pilot holes and driving screws into the brackets will make you wish you had an extra pair of hands. Save yourself a lot of frustration by gluing and clamping the brackets to the shelf or cabinet bottom, and then letting the glue dry before drilling the holes and driving the screws (above). Leave the clamps on while you drill and drive the screws.

—from the **WOOD®** shop

Pick the right epoxy

There's a wealth of liquid epoxies for various woodworking chores, as shown in this chart. Which to choose for the project in hand? Save the quick-set epoxies, with their limited working time, for parts that can't be clamped together. Use epoxy putty to fill misplaced screw holes or gaps, but avoid it where you need tight-fitting pieces.

For parts you'll have to clamp, take advantage of the longer working times of the slower-curing formulas. Although some quick-setting formulas can be sanded or drilled within an hour, all epoxies should be allowed to cure overnight for maximum hardness.

Most epoxies are available at home centers, but don't limit yourself to those sources. You can buy epoxy in

different quantities, containers, and formulas from hobby shops, marine repair suppliers, or mail-order woodworking suppliers. You also can buy

some epoxies directly from manufacturers, such as System Three Resins (800-333-5514; systemthree.com).

—from the **WOOD** shop

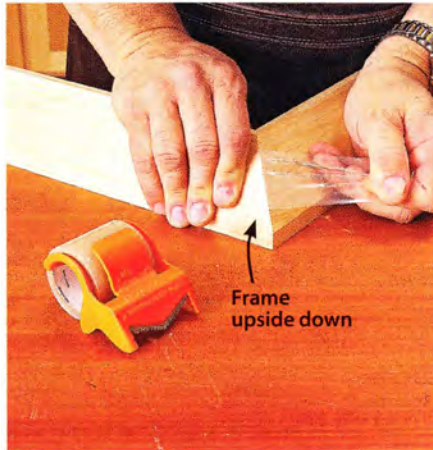
Choose the epoxy to suit your project

Epoxy Formula	Set Time	Shear Strength	Advantages and Applications
Quick-set	4–6 minutes	1,600 PSI	For simple glue-ups and on pieces that would be difficult to clamp, such as compound-miter frames
Putty	5 minutes	1,000 PSI	Handy as a filler for mispositioned holes or gaps that can be painted or hidden
Gel	10 minutes	1,900 PSI	Less prone to dripping when used on vertical surfaces
Marine	50 minutes	1,900 PSI	Can be applied and allowed to cure underwater for maximum water resistance
Extended time	60 minutes	1,750 PSI	For large glue-ups or those involving several parts where extra working time is needed

Savvy tips for gluing compound miters

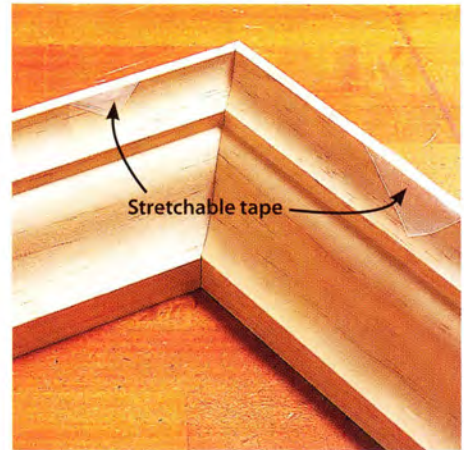


Gluing up picture frames can be tricky when the profiles are fancy. For awkward frame parts, try one of these clamping techniques. To grip the angled shape of the molding, use pinch clamps shown *above*. (Right Angle Clamp, no. 149089, \$28.99, 800-225-1153 or woodcraft.com.) Flip the frame parts upside down, add glue, and then use the clamp spreader to attach the clamps to the back side



of the frame. This method has two drawbacks. The clamps leave small indentations on the back side that you'll need to putty before finishing the frame. Second, by working from the back side, it's more difficult to confirm that the pieces are aligned.

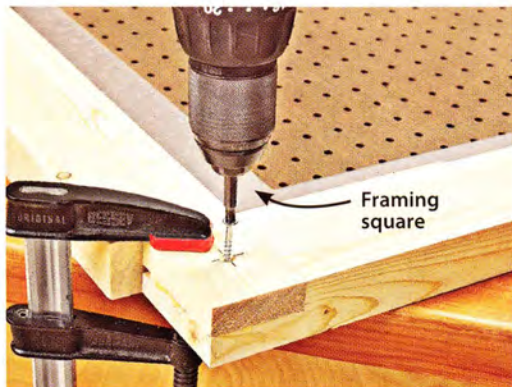
If you don't like dealing with dents, use stretchable tape to hold the pieces together. (X-Treme Tape Quick Clamp Wrap, #149887, \$7.39 with



dispenser, 800-225-1153 or woodcraft.com.) Once again, with the pieces upside down, apply glue and stretch tape between the pieces, as shown *above center*. Although you assemble the frame upside down with this method, too, it's easy to turn the assembly back over, as shown *above*, to check the joints without the risk of a clamp coming loose.

—from the **WOOD**® shop

Let wood screws do the clamping



Here's a way to cut down on the clamping time and number of clamps needed to glue up the lap joints in multiple frames. After clamping up the first frame and checking for square, drill a screw hole centered in each half-lap joint. Then drive screws, as shown *above*; remove the clamps; and set the assembly aside. Now your clamps and bench space are free for assembling the next frame.

—from the **WOOD** shop

A quick scrap-block squaring system

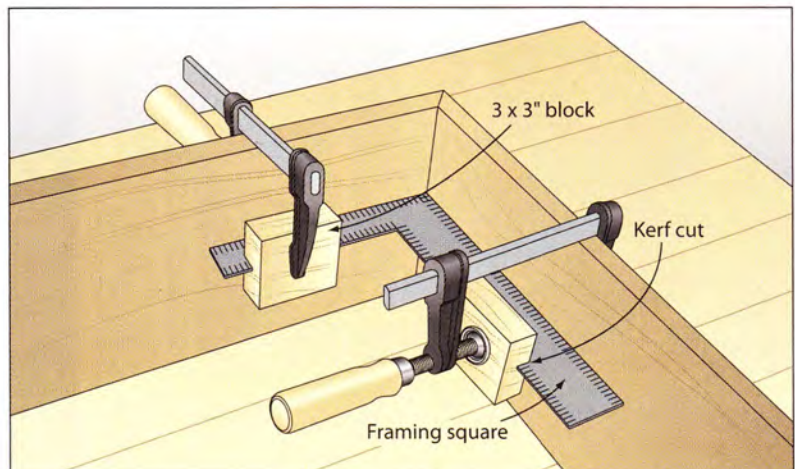
While working on a cabinet, I needed a quick way to square up the corners of some fairly large pieces. I found the answer in my scrap box.

Starting with a piece of $\frac{3}{4}$ " hardwood about 3" wide and 6" long, I centered a $\frac{3}{8}$ "-deep kerf down the length of the piece to

snugly fit the legs of my small framing square. Then I crosscut the blank in half.

To use the supports, I simply fit the blocks on the square, where shown, and clamp them to the two pieces being assembled. This setup frees my hands, too.

—Gregory Hampton, Shoals, Ind.



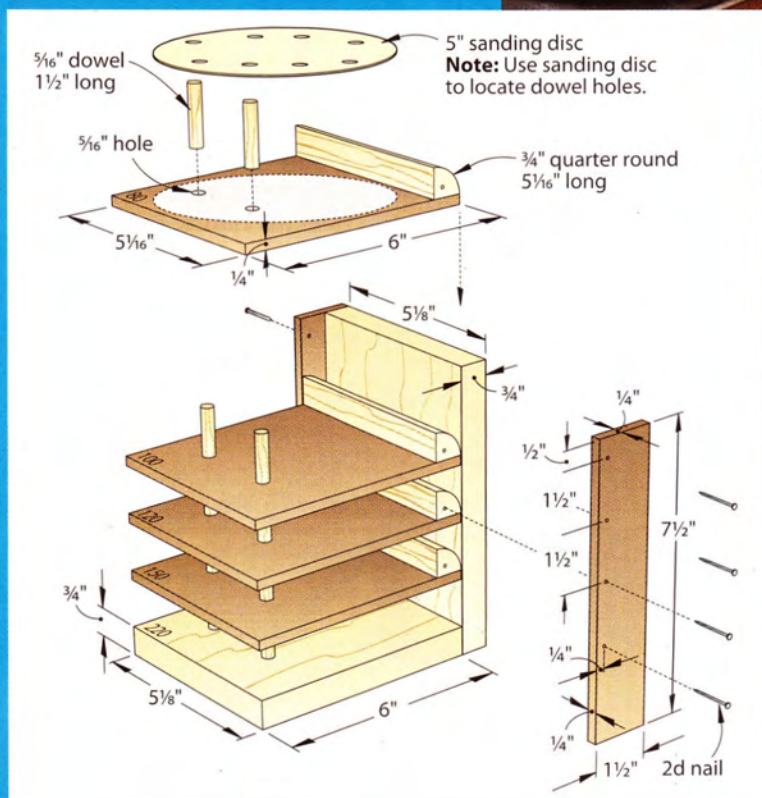
Sanding & Finishing

Flip-up sanding disc caddy

While sanding a table, I got tired of looking through boxes of sanding discs and having the different grits spread out over my workbench. So I made a few sketches, and presto, in less than 30 minutes I built this project I call the "Sand-Which"—a caddy with flip-up shelves that organizes, stores, and provides easy access to all my sanding discs. I keep my caddy on the workbench, but it could easily be mounted on a wall.

Use the drawing to build your own "Sand-Which." Adjust the number of shelves, if you like, for however many sanding grits you typically use.

—Charlie Walsh, Shelton, Wash.



How to deal with pine sap

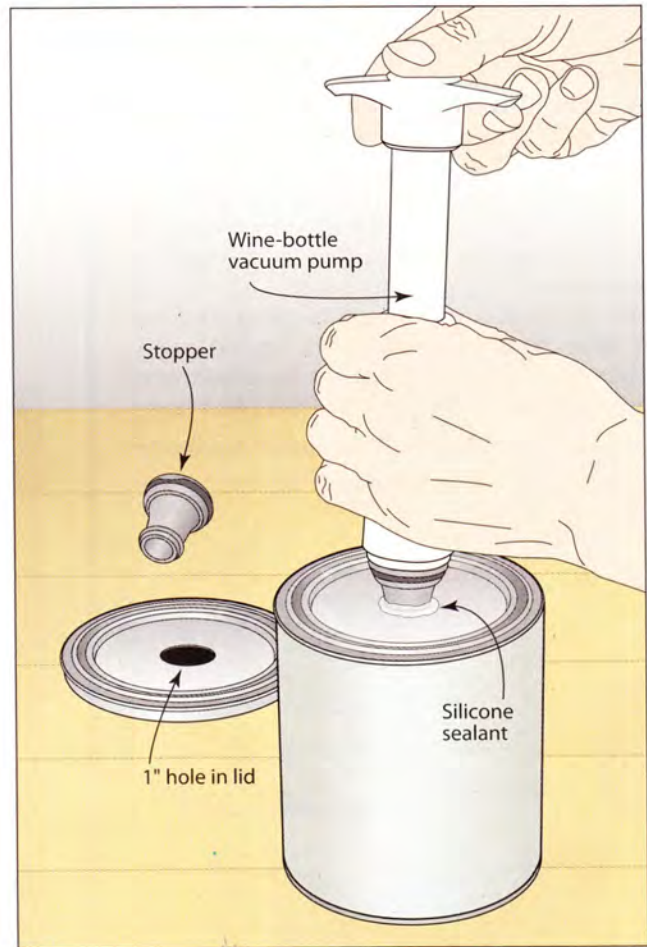


Outdoor projects built with pine tend to leach sap (pitch) through the knots. Pitch bleeding is common in pine that has been air-dried—even years after cutting. The process of “setting the pitch” in sap-soaked wood relies on heat rather than time. Heat the wood enough, and the pitch will “volatilize,” either evaporating or crystallizing. That’s why kiln operators often heat pine to around 160° F.

Given time and enough seasonal temperature highs, pitch bleeding eventually runs its course. What to do in the meantime? Remove the sap with a scraper and sand away any hard residue. Apply a coat of a de-waxed shellac sealer, such as Zinsser SealCoat Sanding Sealer (rustoleum.com, 800-323-3584), trapping the sap under the surface. If some pitch still bleeds through, remove the sap again, and apply another coat of sealer to the trouble spot.

—from the **WOOD**® shop

Fine wines and finer finishes

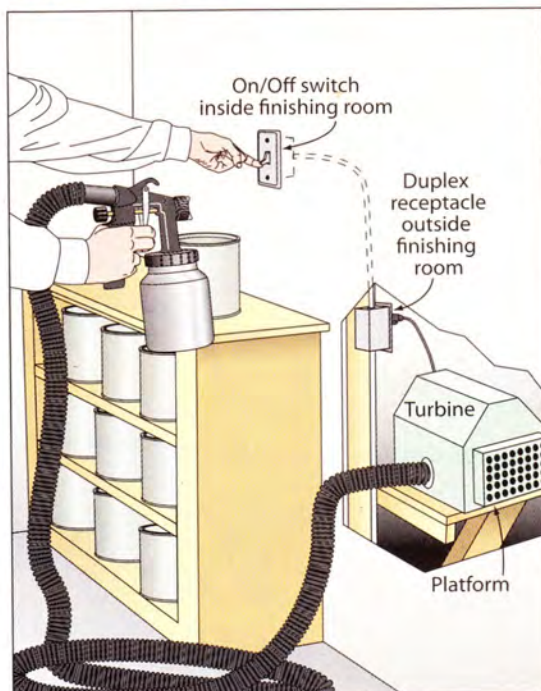


Reduce HVLP noise and clogged filters

Some time ago I built a small finishing booth in my basement shop, where I shoot with an HVLP turbine sprayer. But the turbine was loud in that small space, and the air filter would load up with overspray. I solved both problems by moving the turbine outside the spray booth. Here's how.

I mounted a low platform just large enough to hold the turbine unit on the wall outside the spray booth, as shown. Taking a cue from a kitchen garbage disposal, I then wired a switched outlet outside the booth, controlled from inside the booth. With the turbine's power switch “on,” I plugged it into the switched outlet. Finally, I bored a hole through the wall for the sprayer's air hose.

—Wayne Johnson, Grand Ledge, Mich.



Even in tightly sealed cans, left-over paint and varnish will skin over from the oxygen in the can. I found a solution in my kitchen—a wine-bottle vacuum pump used for drawing air from opened wine bottles (Vacu Vin, 866-274-9009, iicbrands.com).

Whenever I purchase a can of finish, I also pick up a matching extra paint-can lid from my home center. Before opening the finish can, I prep the extra lid like this:

Start by drilling a 1" hole in the extra lid (I used a spade bit). Place the pump's stopper in the hole, sealing it on the top and bottom of the lid with silicone, and let it cure. After you've used the can of finish, replace its lid with your new vacu-lid and use the pump to remove the air. But don't overdo it. I've accidentally crushed a can with the suction of the vacuum.

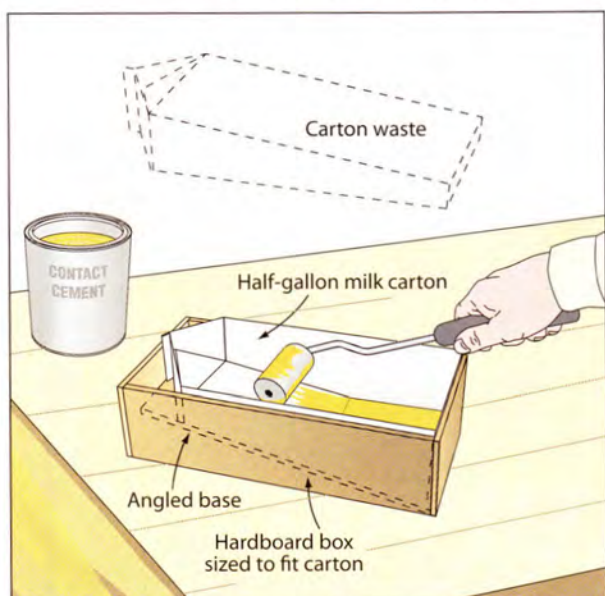
—Bart Crowe, Marietta, Ga.

Custom-fit roller tray for small rollers

I do quite a bit of laminating and, for applying adhesive to a large area, I prefer to use a 3"-wide trim roller rather than a standard-width paint roller because large roller covers soak up—and waste—a great deal more adhesive. Unfortunately, small roller trays can be expensive and hard to find. My cheap, disposable solution to this problem is a half-gallon milk carton cut at a slant, as shown below.

The carton acts as a disposable liner for a box built from hardboard scraps. The angled base of the box holds the carton liner in the proper position so it forms a reservoir, just like a paint tray.

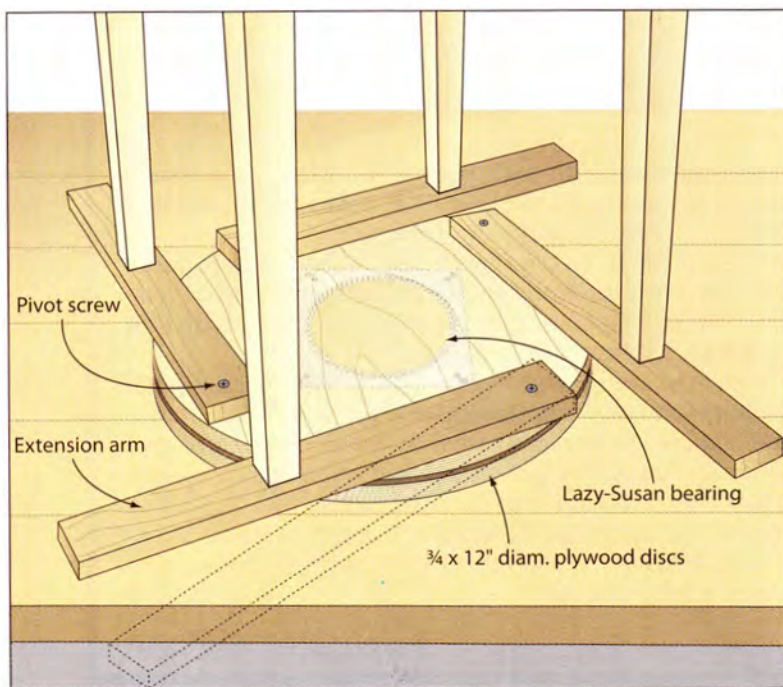
—Frank Penicka, Mount Pearl, Newfoundland



New spin on finishing tables

I came up with this rotating stand when it was time to put a finish on a table. Made from a lazy-Susan bearing sandwiched between pieces of $\frac{3}{4}$ "x12"-diameter plywood, I gave it more reach by attaching four pivoting extension arms. The arms swing out to hold large projects, and then fold up to stow away. Now I don't have to walk around the workbench; I simply rotate the workpiece without handling the fresh finish. And I'm always looking at the project from the best-lit angle.

—Larry Ormsbee, Cambridge, Ont.



Sand safer with a jointer pushstick

While removing the mill marks on some lumber with my stationary belt sander, I noticed (for the umpteenth time) that my fingertips were very close to getting scraped as I held the board's edges. I had recently made *WOOD*® magazine's "Sure-grip" jointer pushstick. (For a free project plan, go to woodmagazine.com/jpushstick).

So, I used it to keep my fingers clear, as shown. The board stayed on the sander and the skin stayed on my fingers.

—Charles Hamilton, Gray, Tenn.



Salvation for clogged nozzles

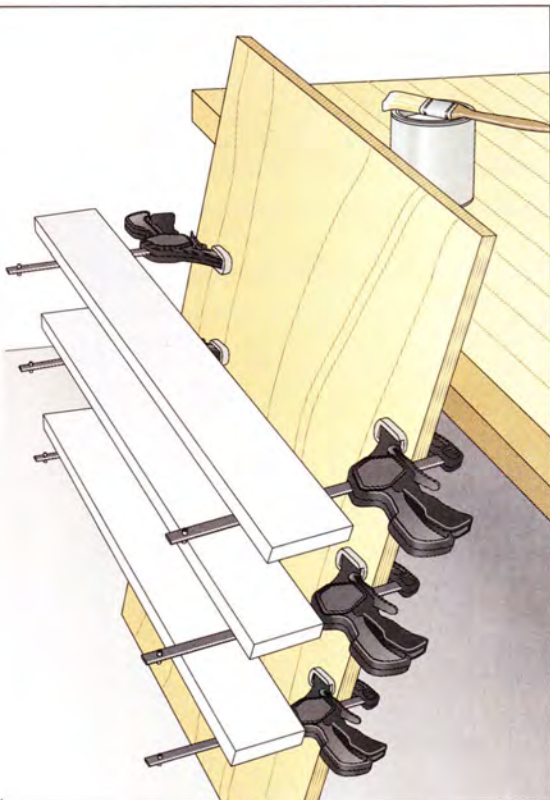
Nozzles on spray-adhesive cans tend to clog up. Turning the cans upside down after each spraying session and spraying for a few seconds helps, but tips can still clog. To salvage half-empty cans of spray, try soaking the nozzles for 5 minutes in lacquer thinner in a small can or glass such as a baby-food jar. Then wipe the nozzle clean and reinstall it on the spray can. Take an added step against clogs and buildup by wiping a small amount of petroleum jelly on the outside of the nozzle before you store the can.

—from the **WOOD®** shop



Learn more about finishing at:
woodmagazine.com/finishing

Instant drying rack for fast finishing



While painting some shelves recently, I ran out of space to stack drying boards. So I took a large scrap of plywood and attached one-handed bar clamps along the edges. In no time, I had an impromptu drying rack. Be sure to tilt it back a little when you set it aside. Otherwise the weight of your boards will topple it.

—Rob Kurtz, Amherst, Ohio

Convert your R.O. sander to an edge sander

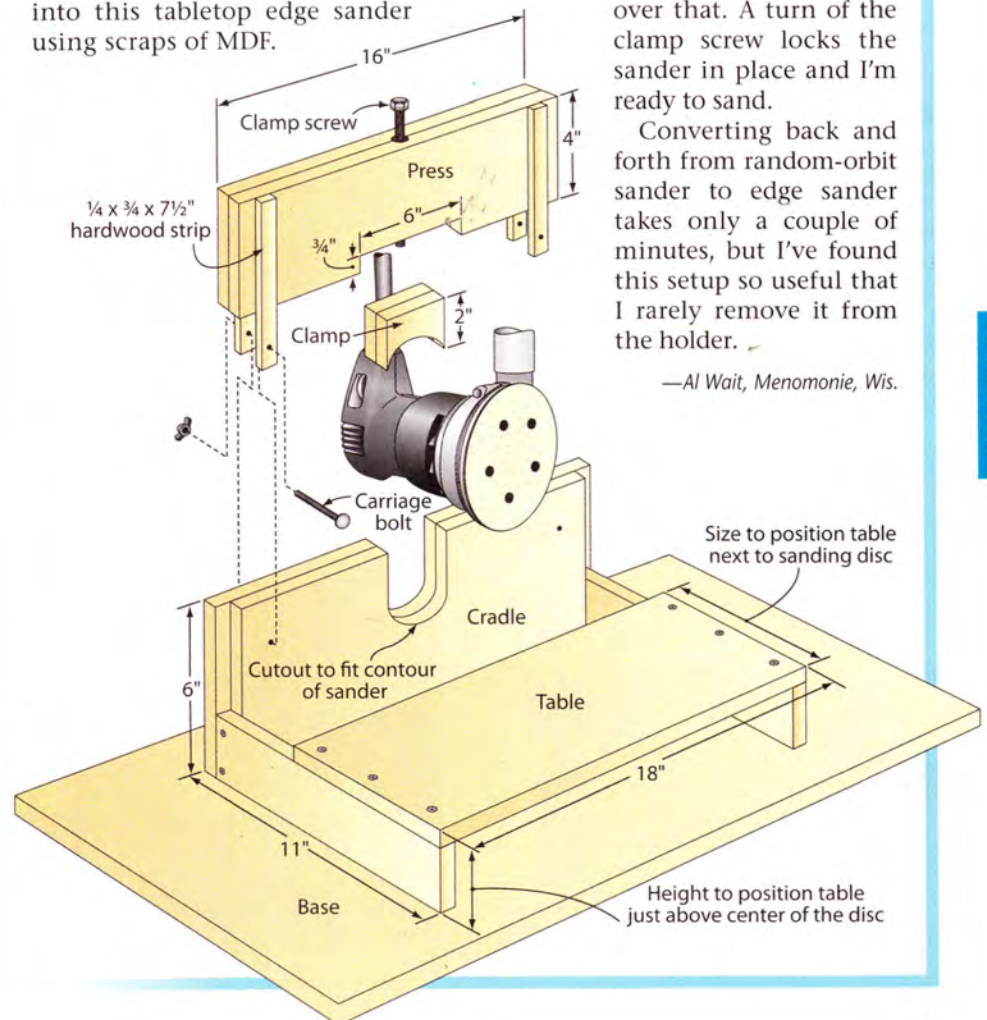
My woodworking hobby steered me into refurbishing old furniture years ago. For such delicate work, I needed a small-parts edge sander. So I converted my random-orbit sander into this tabletop edge sander using scraps of MDF.

Once I customized the cutout to support the sander, the rest went together quickly. The sander drops into the cradle, the clamp rests on top of the sander, and the press bolts

over that. A turn of the clamp screw locks the sander in place and I'm ready to sand.

Converting back and forth from random-orbit sander to edge sander takes only a couple of minutes, but I've found this setup so useful that I rarely remove it from the holder.

—Al Wait, Menomonie, Wis.

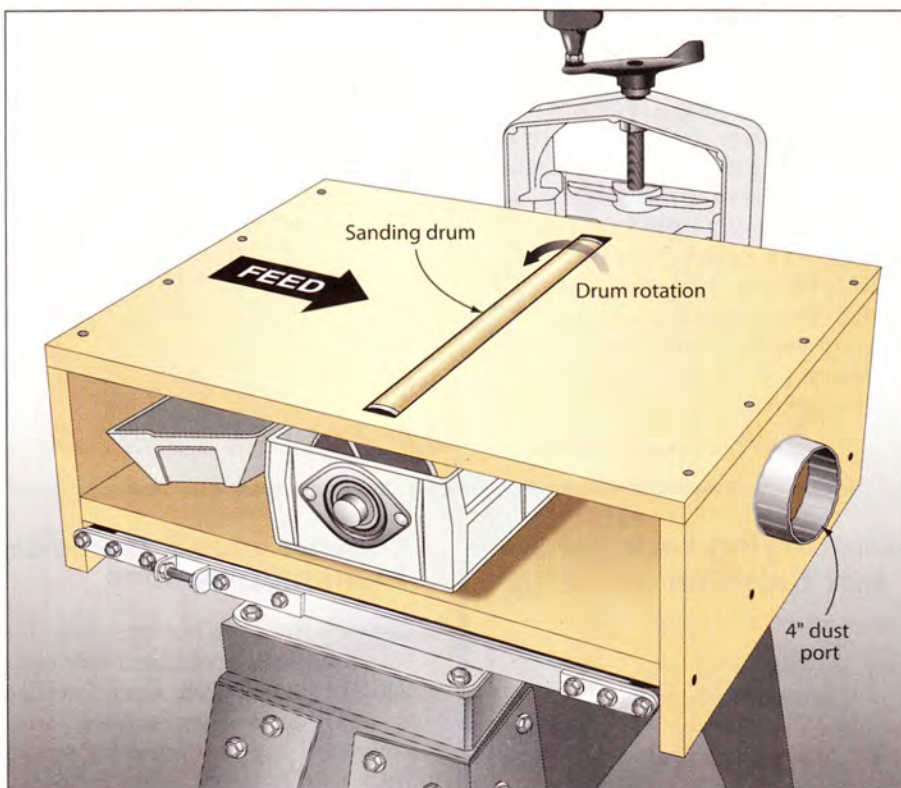


Drum-sander adapter breaks thickness barriers

I love my drum sander for thickening lumber and leaving a smooth surface. But sometimes, I want the same finish on workpieces larger than the machine's 3" maximum thickness, such as when sanding dovetails flush on a drawer. So, I adapted my drum sander to sand on the top of the drum by building the box at *right*. It just fits the bed, with the ends protruding down to keep it from moving. It's high enough to accommodate the opened sander.

To create the slot for the drum, I installed 36-grit paper, clamped the box in place, turned on the drum (but not the feed belt) and raised it until it touched the underside of the tabletop—just enough to leave a mark. Then, I removed the top, and cut $\frac{3}{4}\times 1$ " slots through the top at either end of the mark to accommodate the exposed ends of the drum where the sandpaper doesn't reach. I replaced the top and slowly raised the sanding drum until it protruded slightly from the top.

—Paul Milo, Glendale, Ariz.



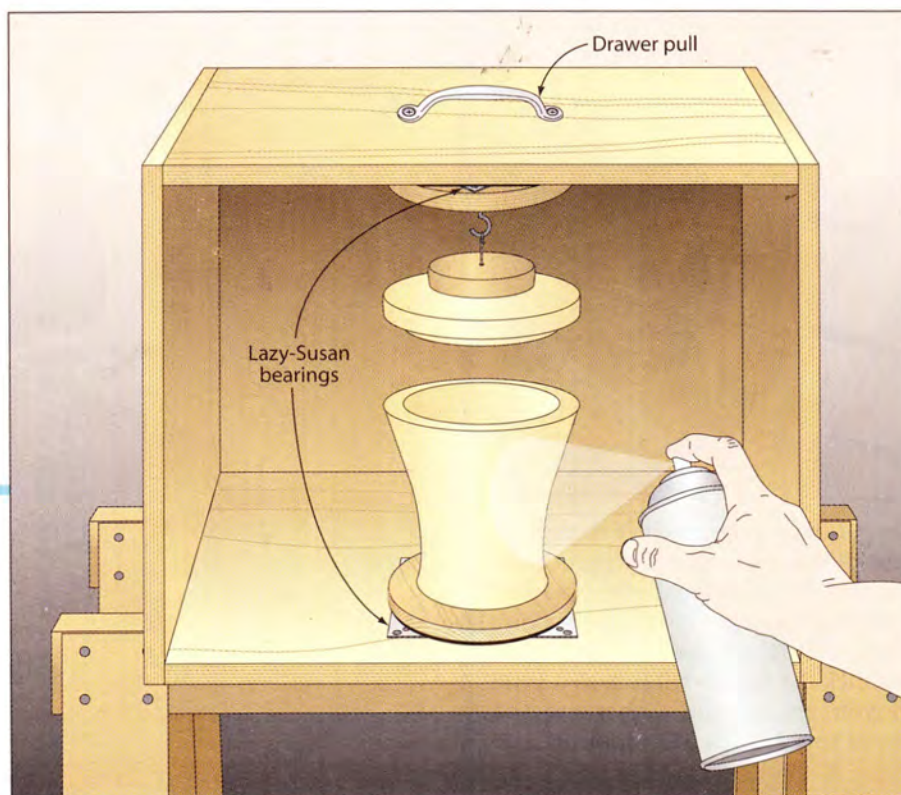
Go-anywhere mini spray booth

I like to finish my small turned projects with aerosol spray lacquer, but don't like the fumes in my shop. So I made this portable spray booth from scrap plywood. The simple 12×16×16" box features two lazy-Susan bearings—one inside the top that holds a cup hook for hanging small parts, and one in the bottom for larger vessels. When it comes time to spray-finish, I carry the box outside using the drawer-pull handle. The lazy-Susan bearings let me rotate the parts as I spray, for full coverage. Then, I just carry the box back into the shop for drying.

—Del Kramersmeier, Eagle Grove, Iowa



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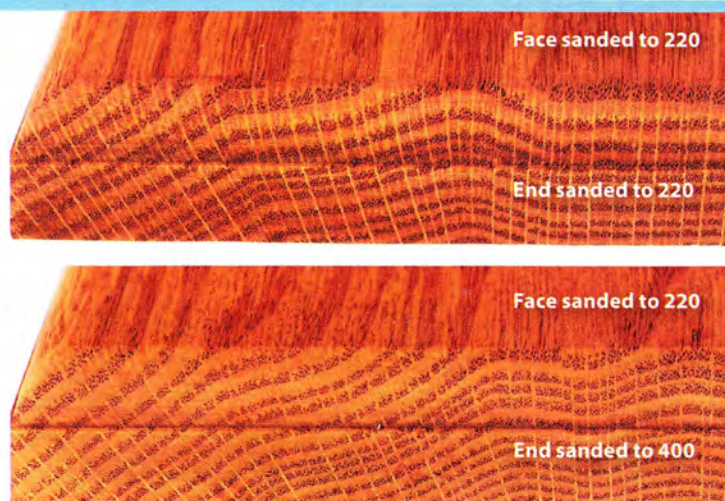


Lighten up end grain

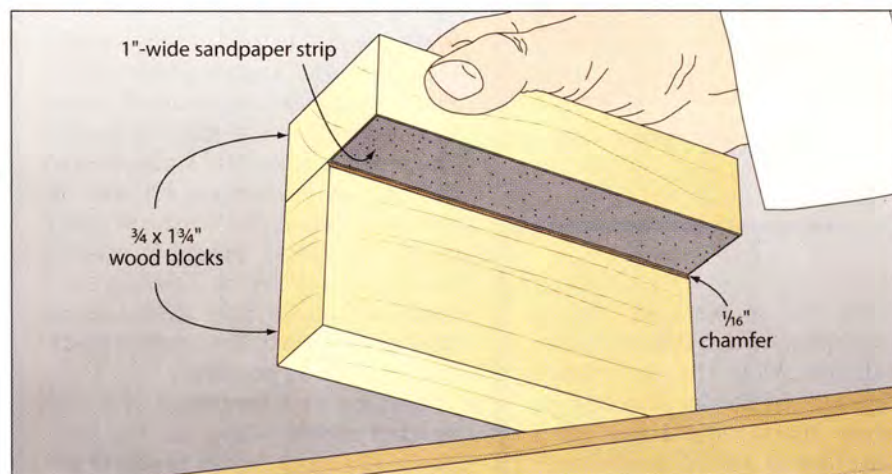
When staining wood, making end grain match the faces of a board can be tricky, especially in porous woods such as oak. The open ends of the grain soak up more stain pigment than the less-porous faces and edges.

Sanding closes up some of those open cells, slowing the intake of the stain. The finer the grit, the less pigment will stick. For end grain on porous woods, a good rule of thumb is to double the grit. So, if you sand through 220 grit for the faces and edges, continue sanding the end grain up to about 400.

—from the **WOOD®** shop



Stop rounded edges with this corner-sanding block



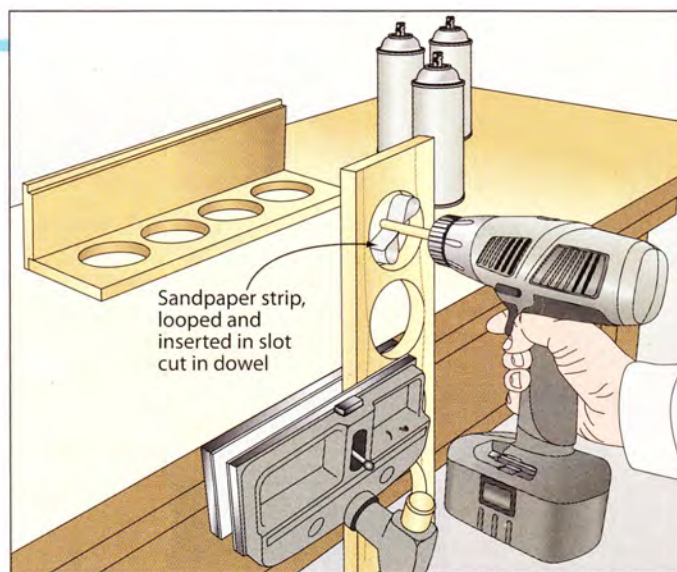
When sanding the edge of a workpiece, it's easy to accidentally round the edges slightly, but I made a square-edge sanding block that eliminates that. Before assembling the block, I sanded a small chamfer along the inside of the upright. This allows me to tuck the sandpaper strip—cut from a 1"-wide sanding belt—tightly into the corner. I secured the abrasive using double-faced tape.

—Don Brown, Maineville, Ohio

To sand circles, strap on this gritty "bow tie"

If you need to sand the inside of a large hole for finishing, you can use your fingers and a good deal of patience, but usually, the results will be uneven. A better and faster solution is to use the technique shown at *right*. Cut a piece of $\frac{3}{8}$ " dowel rod 4–6" long and use a bandsaw to cut a slot into the end of the rod. Next, take a strip of cloth sandpaper and loop it into the slot so that the loop is slightly larger than the hole you want to sand. Install your hole sander in a variable-speed drill and let the sanding loop smooth the inside of the hole.

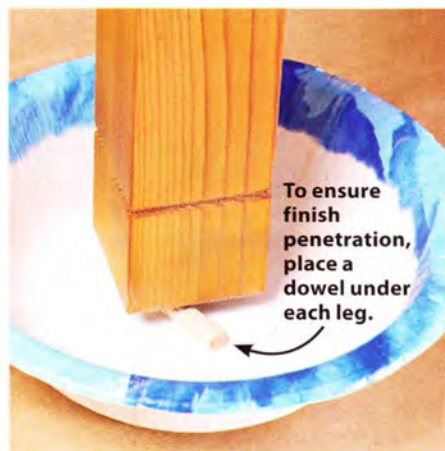
—Daniel Kingsberry, Gatineau, Que.



An easy way to seal outdoor furniture-leg end grain

For long-lasting outdoor projects, always seal exposed end grain, especially the bottom ends of legs. Here's a hassle-free way to do this.

Place each leg in a shallow container, raising the leg off the bottom of the container, as shown *below left*.



Then pour finish in each container, as shown *below right*. After a few hours, the grain will be saturated. Now turn the furniture upside down, wipe away any excess finish, and let it dry.

—from the **WOOD**® shop

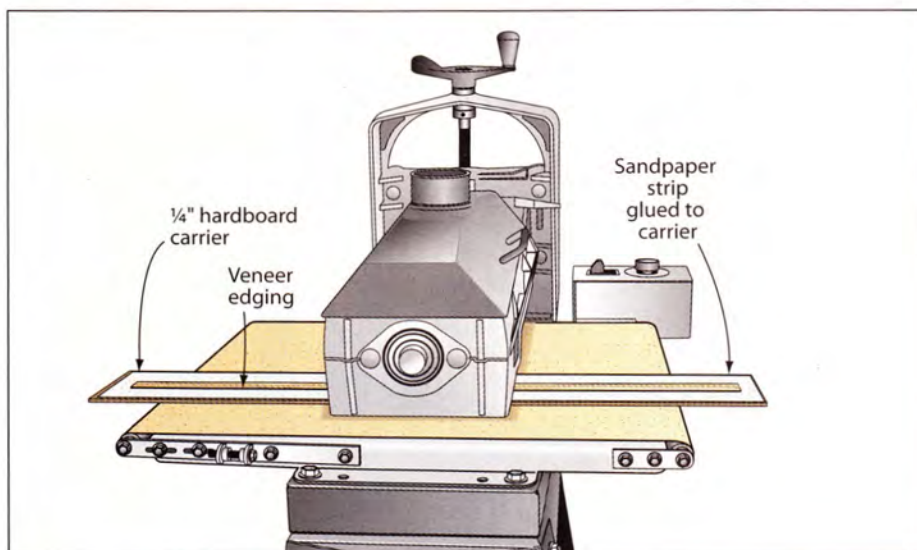


Slide thin strips through the sander on a nonslip carrier

To make thin hardwood strips for edging and Shaker-style boxes, I band-sawed stock to rough thickness and then tried to sand the pieces to final thickness—about $\frac{1}{8}$ "—on my drum sander. As the strips approached $\frac{3}{16}$ ", however, they would sometimes split or break.

I solved the problem by gluing 120-grit sandpaper to a $\frac{1}{4}$ ×6×36" piece of hardboard. Now the thin wood rides through the sander perfectly on the carrier board, and I can sand strips uniformly to $\frac{1}{8}$ " or thinner regardless of grain.

—Thomas L. Peters, Midland, Mich.



Erase mildew stains



When wood is stored improperly, such as under a waterproof tarp, it tends to mildew—especially if stored this way for several days or weeks. The result is unsightly stains caused by the mildew fungus. It's easy to give this fungus the brush-off using readily available products around your house. Start by mixing up a solution of one part dishwashing liquid to 10 parts household bleach and 30 parts warm water.

Working in a ventilated area and wearing rubber gloves, use the solution and a cloth or soft-bristle brush to gently scrub away the surface mildew, including any that's reached into the grain of the wood. Finish by rinsing the cleaned area with fresh water, and wipe the surface dry with a soft towel. Wait for the wood to dry thoroughly before working it further, then sand off any raised grain.

When future projects need to be put on hold and you can't store them indoors, cover them with an old sheet or blanket that allows air to circulate and won't trap moisture.

—from the **WOOD** shop

Help birch flames look hot

Sealing flame-pattern birch with boiled linseed oil to show off the grain can darken the whole piece, not just the grain. If you want to keep the background hue of the wood light, use a product with soy oil, or at least less boiled linseed oil.

To demonstrate the differences, we applied boiled linseed oil to the far-left quarter of the test board *below*. Then, from left to right, we applied Antique Oil (Minwax, minwax.com), which contains boiled linseed oil thinned with varnish, and Varathane Wood Condi-

tioner (Varathane, 800-323-3584; rustoleum.com), made with soy oil. For a nondarkening topcoat alone or over oil, choose superblonde shellac, CAB-acrylic lacquer, or a water-based finish like the one shown *below right*.

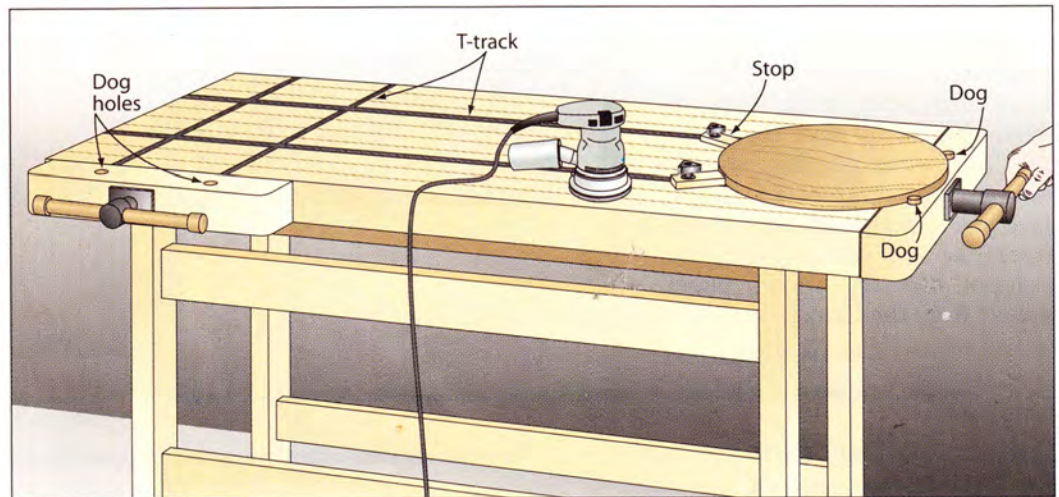
—from the **WOOD**® shop



No job too odd for these bench clamps

Holding an odd-shaped part on a workbench to sand or do other work has always been a chore. My solution: Replace the dog holes on my workbench with T-tracks aligned with the dogs on my vises. By sliding the stops along the track and varying the stop sizes, almost any angle or odd shape can be held between the stops and the vise dogs.

—Bob Keith, Plano, Texas



Fingering the right glove



Latex gloves provide good protection against water-based solutions, but organic solvents, such as acetone, lacquer thinner, denatured alcohol, and mineral spirits, can permeate latex. For working with organics, look for nitrile gloves, shown at *left*, that won't break down when exposed to most common shop chemicals. Nitrile gloves are also a good choice for anyone with latex allergies.

These better gloves cost about 50 percent more than the latex ones. But don't try to stretch your dollar by hanging on to old gloves, because solvents eventually permeate even the best gloves.

—from the **WOOD** shop

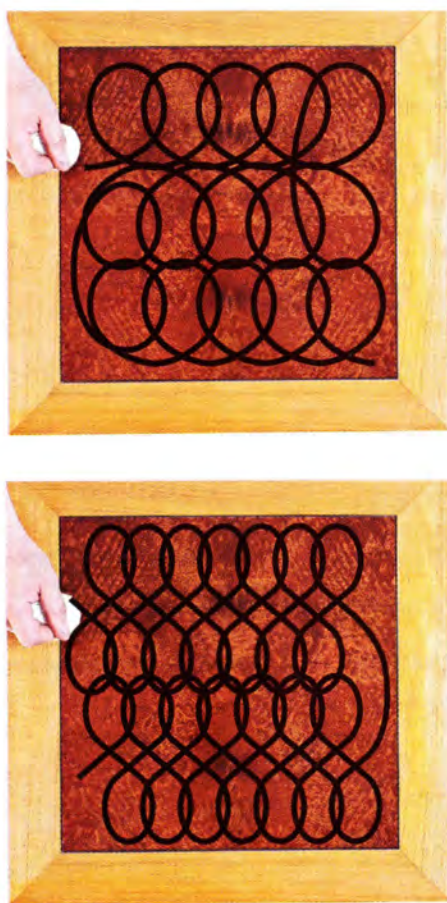
Vary your French-polishing strokes

If you're after a high-gloss finish without streaks or dust nibs, consider the technique called French polishing. Dating back several centuries, French polishing involves using a cloth pad soaked with shellac. You can French-polish a surface with simple back-and-forth strokes, but the job goes faster and is easier on your arms if you vary your polishing pattern.

The strokes shown at *right* allow you to move the pad constantly without frequently lifting it from the surface. As with the basic back-and-forth stroke, your pad needs to be moving when it touches down on the wood surface and as you lift it away. Avoid letting the pad come to a stop as you change directions or you'll dull the surface and the pad will leave marks.

Whichever pattern you choose, remember this French-polishing adage: Take care of the edges, and the middle will take care of itself. You can French-polish the frame of a tabletop separately from the center panel, but your strokes should extend over all four edges of the surface you're polishing. For framed surfaces like the ones shown, we French-polished the center panel separately from the frame.

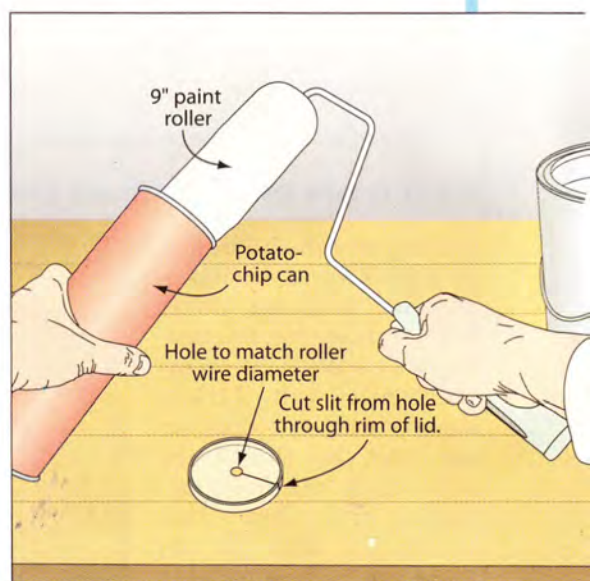
—from the **WOOD**® shop



Scarf a snack, save a paint roller

I hate washing out my paint rollers when I have to take a break for lunch or overnight. So, to keep the roller from drying out, I store it in a discarded potato-chip can. After cleaning out the can, drill a hole in the center of the lid and cut a slit from the hole to the lid edge. Then slip the roller into the can and snap the lid into place. The can works great as a roller saver (and as an excuse to eat potato chips).

—Gerrit DeBoer, Grandville, Mich.

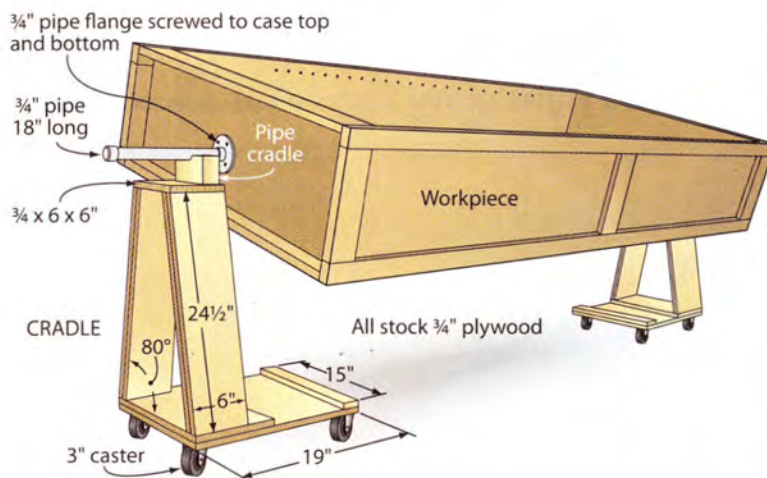


Ready-to-roll cradles provide easy finishing access

This large-project "rotisserie" has come in handy a few times in my small shop. With it I can rotate projects by myself in order to access all sides for finishing. It acts as a drying rack after finishing, and I can roll the project out of the way if I need extra shop space between coats of finish.

Just screw the pipe flanges to the top and bottom of the case where the holes won't be seen. Thread in the $\frac{3}{4}$ " pipe and rest each end in one of the cradles.

—Dave Gruenhagen, Boise, Idaho

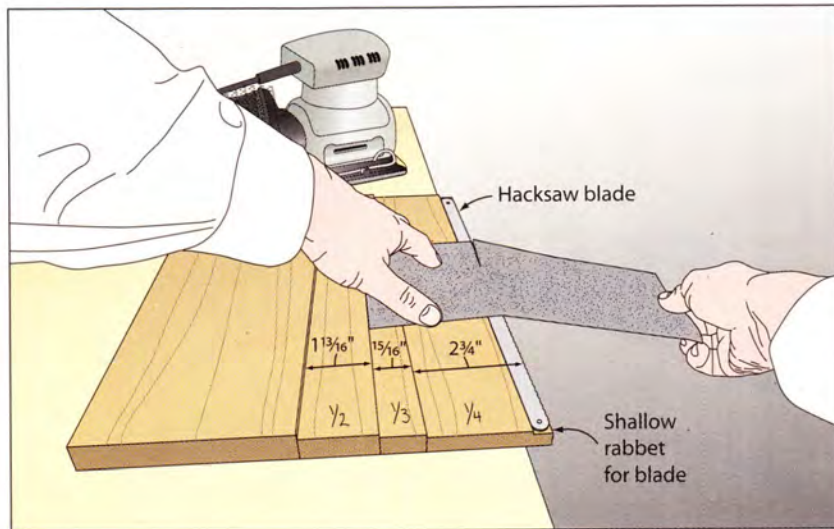


Right-size sandpaper with this "cutting" board

Tearing sandpaper sheets to size is a tedious task made easier with this simple jig. First, cut some scrap hardwood to the length of a hacksaw blade. Rip three pieces to the widths shown below and plane them to slightly different thicknesses to create the "steps," as shown. Make a shallow rabbet for the blade in the $2\frac{3}{4}$ "-wide piece and then edge-glue

the pieces together. Epoxy the blade in the rabbet and you're ready to make piles of properly sized sheets in no time. By butting the edge of the abrasive against the correct step, you can tear-off half-, third-, and quarter-sheets for your power sanders or for hand-sanding blocks.

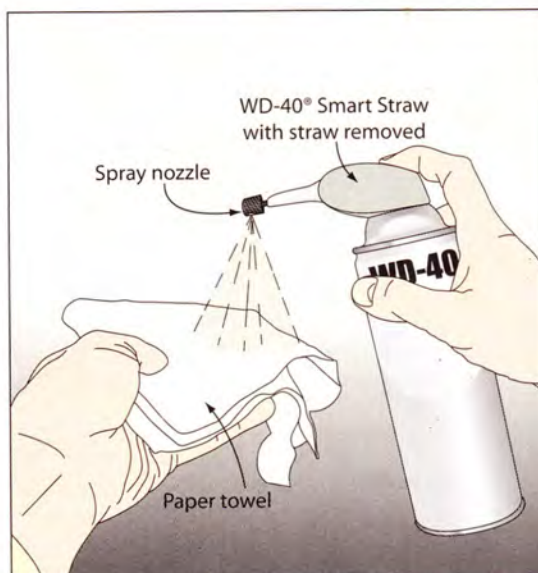
—Lynn Lawrenz, Algoma, Wis.



A surefire way to clean aerosol nozzles

In my shop I frequently use spray cans of paint and finish and I don't like wasting the can's contents or pressure to clear the nozzle. Instead, I use a can of WD-40®, as shown, to easily and completely clean the nozzle.

—David Buskirk, Ray, Ohio



Dos and don'ts for better finishes, weather or not

- If you're working in an unheated shop in a cold climate, **DO** move finishes (especially water-based ones) inside in the fall and back out to the shop in the spring.
- **DON'T** store finishes (or glues) on a cold basement floor.
- To gently heat finish to room temperature, **DO** use a warm-water bath, such as a beverage warmer below, or put the can in front of a heat register for a few minutes.
- **DON'T** heat it above the temperature of the wood, or use an open flame.
- After applying finish, **DO** keep the heat on until the finish dries.
- For an air-conditioned shop, **DON'T** set the air-conditioner to recirculate indoor air. Always pull in outside air.
- **DO** use a dehumidifier if your shop isn't air-conditioned or is in a damp or humid basement.
- **DON'T** apply finish when the previous coat is still tacky.
- **DO** decide when to finish. Temps and humidities tend to be lowest early in the day. And then **DON'T** allow your project to dry in the sun.

—from the WOOD® shop



An electric beverage warmer gently heats a cold can of finish to room temperature. Loosen the can lid before heating.

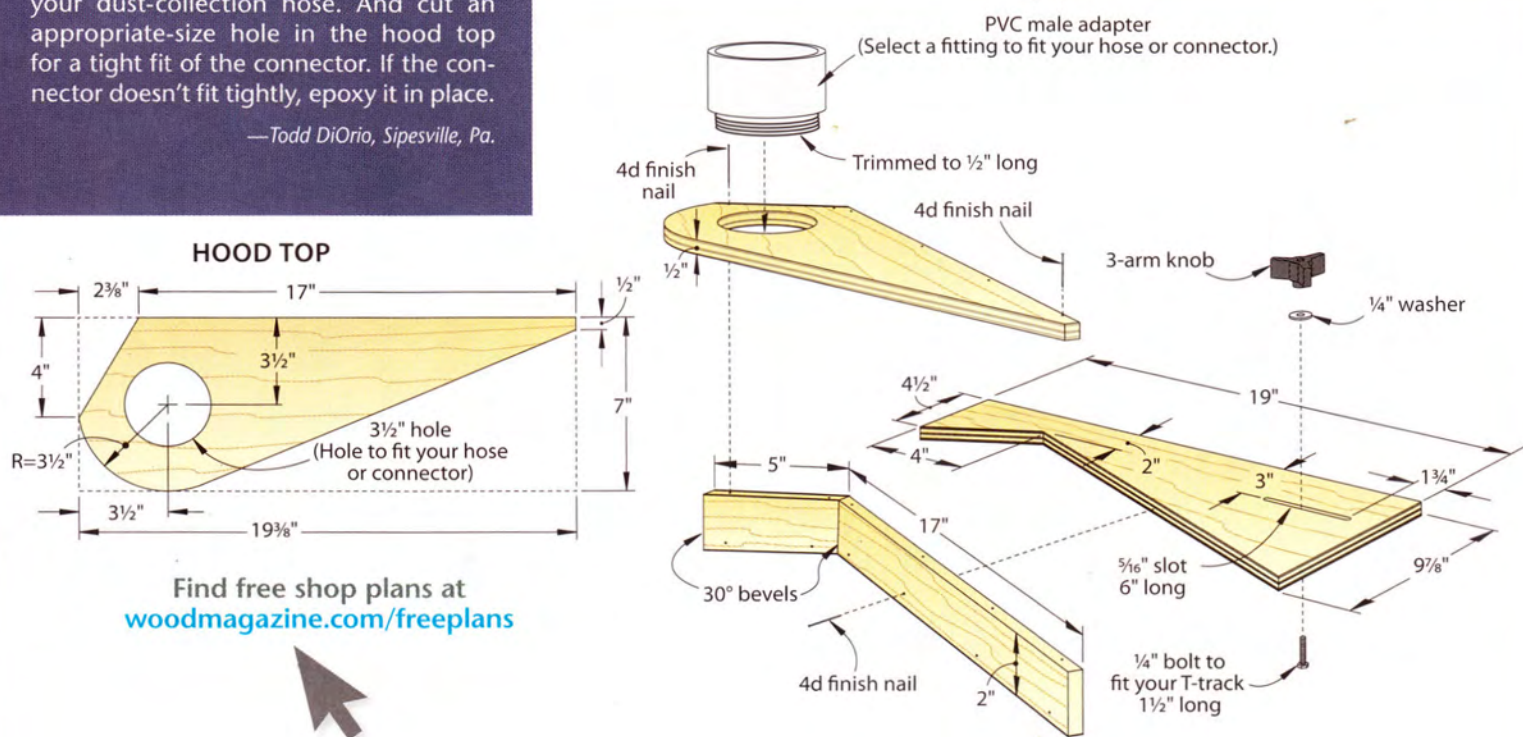
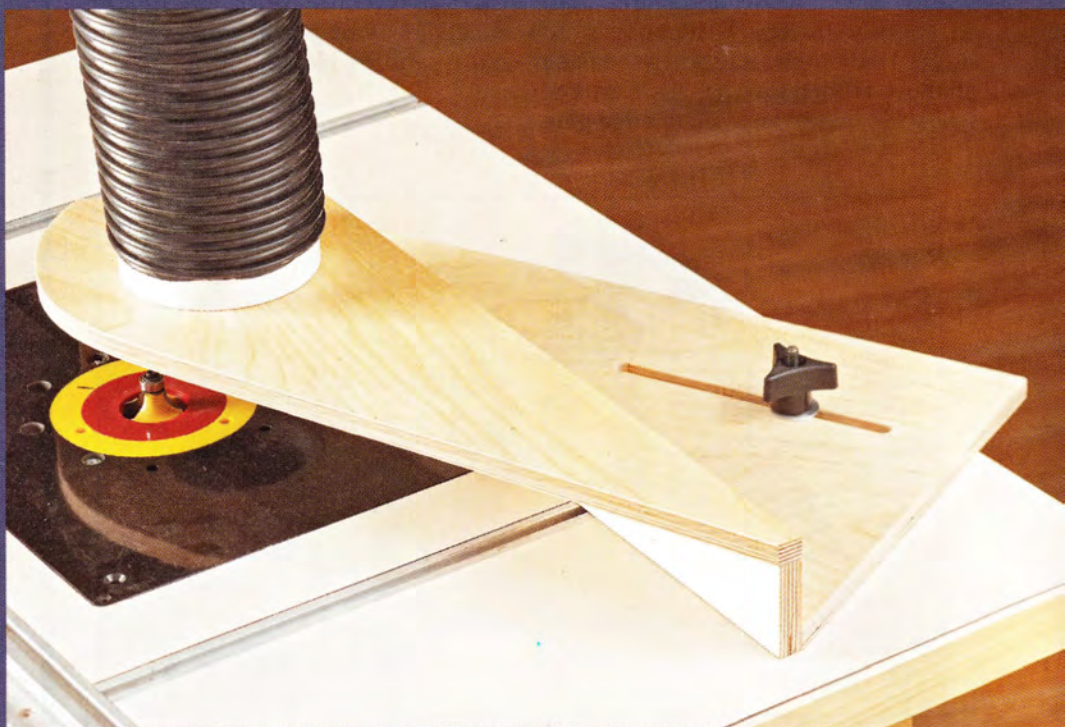
Dust Collection

Overhead cleanup when a fence just won't do

When you're template or free-hand routing, a fence-mounted dust port does little good. So for those situations, I designed this dust hood. It can be mounted anywhere on the router table, and is secured at a single point in T-track so it easily pivots to the best position.

To make your own, use $\frac{1}{2}$ " plywood and follow the illustrations. If you don't have T-track in your router table, simply drill a pivot hole or two in your router top to accept the pivot bolt. Also, select a connector (I used a PVC fitting) to fit your dust-collection hose. And cut an appropriate-size hole in the hood top for a tight fit of the connector. If the connector doesn't fit tightly, epoxy it in place.

—Todd DiOrio, Sipesville, Pa.

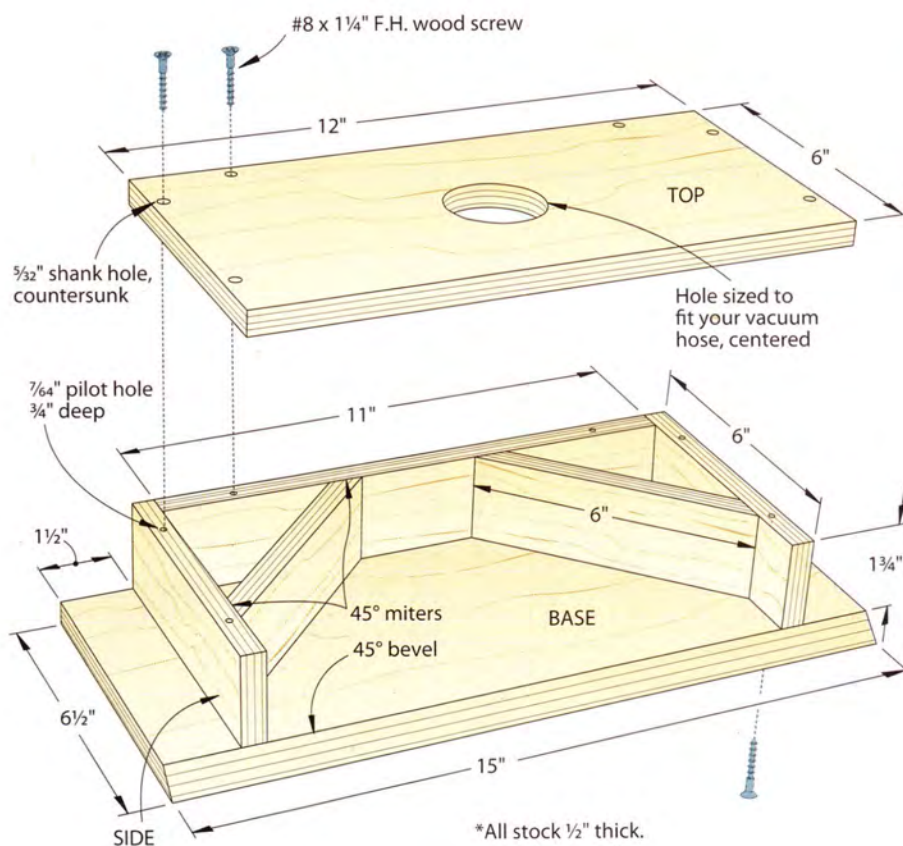


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Dual-purpose dust shoot

We all like making dust in the shop, but nobody likes cleaning up afterward. Here's a handy helper that both speeds floor sweep-up and keeps chips and dust off the workbench. Build this simple project using $\frac{1}{2}$ " scrap. Cut a hole in the top to fit your vacuum hose. Create the base so the ends protrude $\frac{1}{2}$ " beyond the edges of the sides to clamp it to your workbench. Then, chamfer the front edge of the base for ease in sweeping debris into it for easy pickup.

—from the **WOOD®** shop

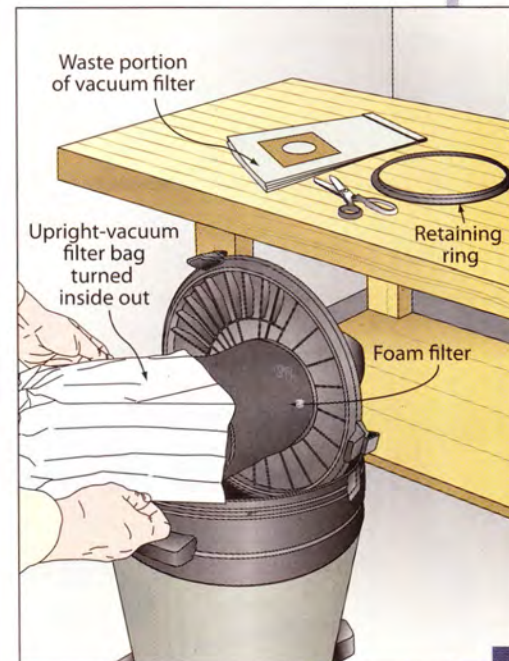


Frugal filters for fine-dust collection

The microfiltering bags and filters made especially for catching fine dust in shop vacuums can get expensive after replacing a few. But the ones sold for household canister vacs are more economical. I buy the cheap ones, then modify them to fit my shop vacuum.

To retrofit the bag, I first cut the top off just past the point that includes the small opening. Next, I turn the bag inside out so the air will still flow through the filter in the normal direction. I slip the bag over the foam filter of my shop vacuum, and use the standard retaining ring to hold it in place.

—Barry Terrell, Houston, Texas



Learn more about dust collection at:
woodmagazine.com/dustcollection

Smart solutions for dirty dust bags

If your dust collector's filter bag gets caked with gunk inside and doesn't seem to draw well, tossing it into the laundry may not be the best remedy. According to the experts at American Fabric Filter Co., a fine layer of dust coating the inside surface of the bag actually works with the fibers of the filter to trap small particles. But if you notice a thick crust of dust (called "dust cake"), or you're seeing dust bleed through the filter, or you're experiencing significantly decreased suction, it's time to act.

Before you launder the filter bag, try these steps: With the dust collector running and the bag inflated, tap the bag with your hand or a broomstick. If that doesn't clear up the cake, try blowing compressed air against the outside of the bag with the collector running. Still not drawing

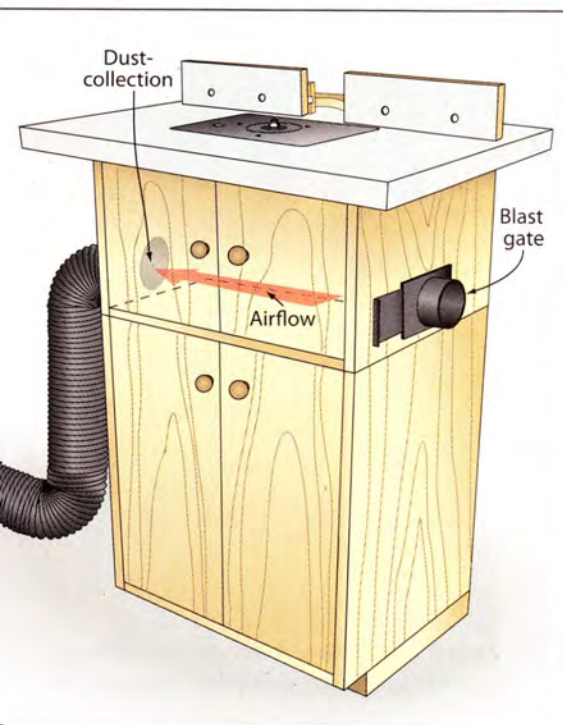
properly? Remove the bag, turn it inside out and vacuum any remaining dust cake, as shown at *right*.

If you're still not happy with the bag's performance, the folks at American Fabric Filter say that a spin in the washing machine could clear up any remaining problems, acting as a "reset" for the filter. (We suggest an industrial machine at your local laundromat rather than the one that normally keeps your tighty-whities white and tight.) Turn the bag inside out, use the cold setting, and wash it on a gentle cycle with laundry detergent. Tumble-dry the bag on the air-only, no-heat setting or hang it outdoors in nice weather to dry completely before using it again.

—from the **WOOD®** shop



Out with the bad air, in with the good



Many woodworkers hook up a 4" dust-collection hose to a mostly enclosed tool cabinet, such as one below a router table or downdraft table. They figure that by pulling 4" worth of air through a 1" bit opening, the dust and chips ought to go screaming through the box and into that dust hose. But in truth, they're choking off the airflow, killing the dust-collection efficiency.

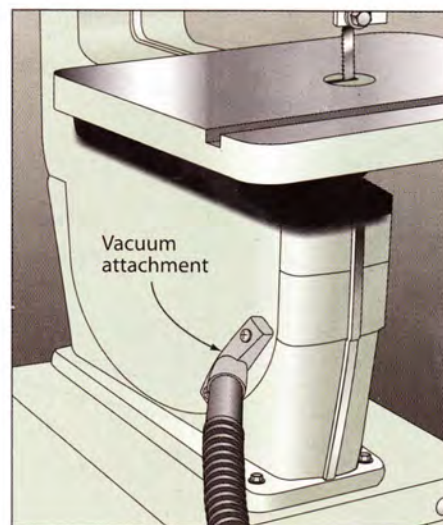
To remedy this problem, simply install a dust-collection blast gate on the cabinet, opposite the hose for outgoing dust, where shown at *left*. By opening this blast gate, you create a "river" of air flowing through the cabinet. Debris gets pulled into the river and carried downstream to the collector. If you lose too much suction with the gate wide open, gradually close it until you achieve maximum dust collection.

—Jim Kahl, Edgewood, Md.

Dirt-cheap dust collection

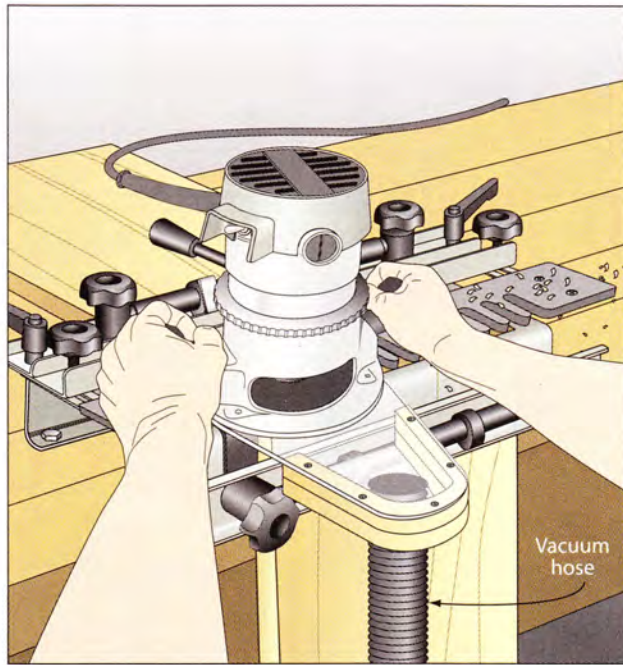
Here's an inexpensive way to improve dust-collection effectiveness on your bandsaw. Use a small bimetal hole-saw to cut an opening in the lower wheel guard. Then bolt a vacuum utility nozzle over the hole, as shown. Attach your vacuum and watch the dust disappear.

—Roger Daniel, Carrollton, Ga.



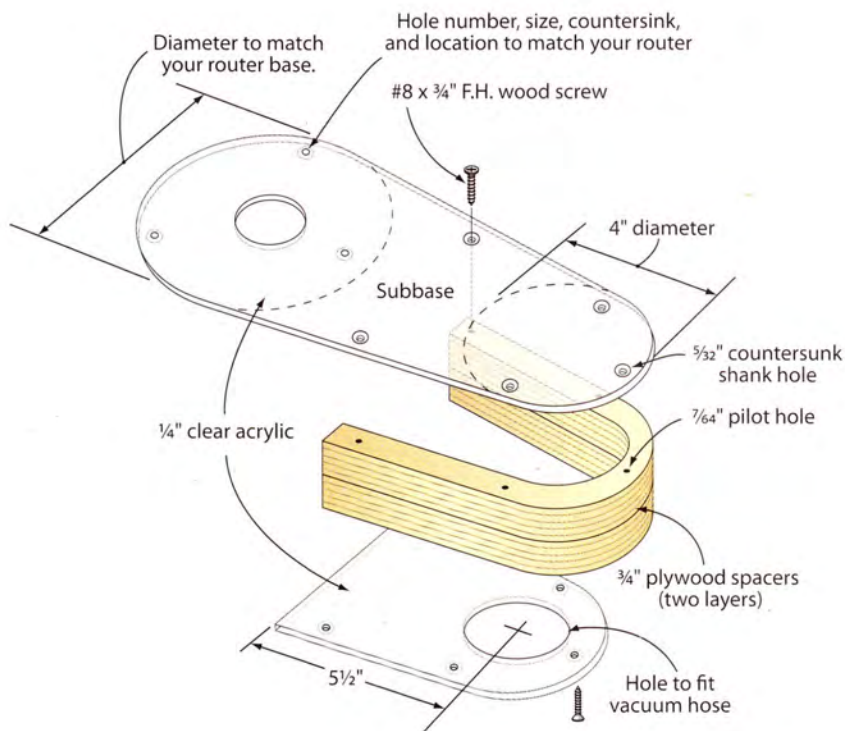
Do away with dovetail dust

Collecting dust from a handheld router is a difficult task at best, especially when using a dovetail jig. I came up with this attachment to solve the problem. From $\frac{1}{4}$ " clear acrylic, cut a subbase with an extended wing, using the dimensions shown below. Drill mounting holes to attach the subbase to your router, aligning them so the router handles will line up with the sides of the subbase. Then make a duplicate of only the wing portion of the base with a hole to fit your vacuum hose. At the bandsaw, cut two $\frac{3}{4}$ "-wide curved spacers from $\frac{3}{4}$ " plywood to match the profile of your wing. Glue and stack the spacers



together. Drill pilot and shank holes, then assemble the jig. Attach your router, hook up your vacuum hose, and get ready for mess-free routing.

—Reid Smith, Huntsville, Ala.



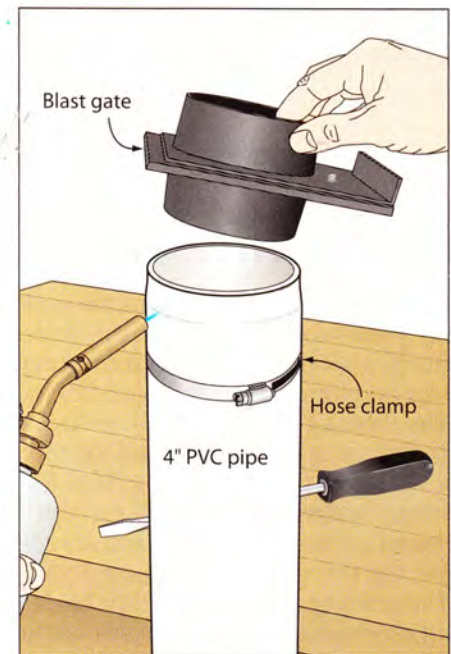
Downsize PVC to fit blast gates

When I installed a central ductwork system for my dust collector, I used 4" PVC pipe instead of steel and saved 75 percent on the cost. But the inside diameter of the 4" PVC is $\frac{1}{8}$ " too large for blast gates designed for steel ducts. My dad and I solved that problem by shrinking the PVC pipe slightly with a propane torch.

To soften the PVC for the joints, we slipped a hose clamp over the pipe and carefully heated the pipe until it softened. With the pipe end soft, my dad slipped the fitting into the pipe, slid the hose clamp up near the end, and tightened it to snug-up the softened PVC end. Once the pipe cooled and hardened, we removed the hose clamp to use for the next joint.

Finally, I secured the blast gate to the pipe with a sheet-metal screw. With no tape, glue, or steel, and only a single hose clamp, it's a clean, simple way to build an inexpensive but effective collection system.

—Scott Perry, Tinley Park, Ill.



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Bust dust before it spreads

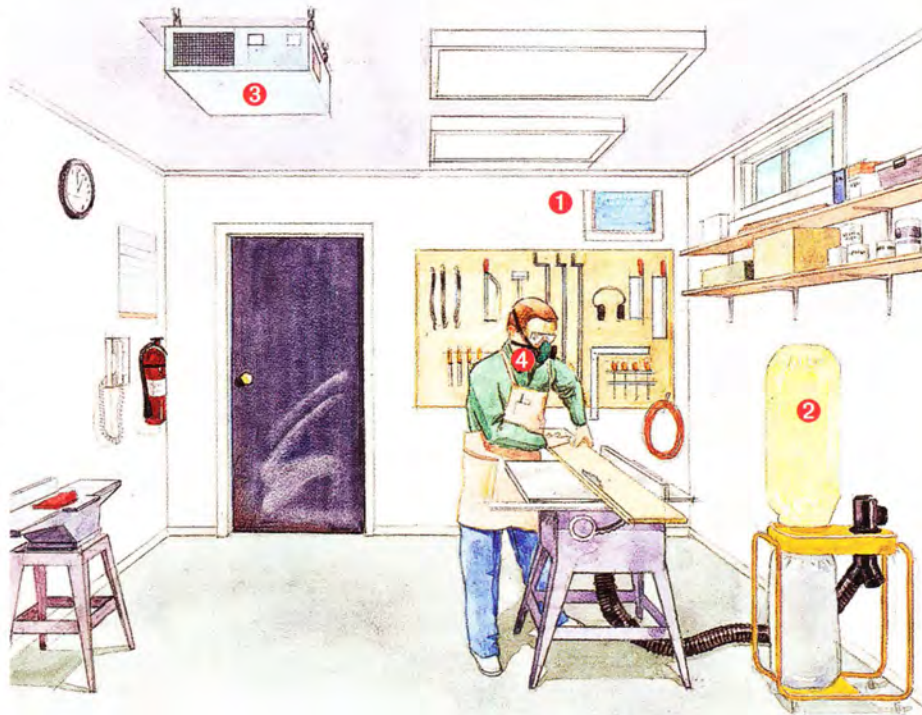
Locating your workshop in the basement could lead to dust fallout upstairs. To head off this problem, start by walling off the shop and installing a ceiling. Where air exits the shop, mount a furnace filter over the return air vent to trap dust.

Next, connect your equipment to a dust-collection system designed to trap particles down to 1 micron and smaller. This includes cyclone systems plus single-stage dust collectors, although some may require an aftermarket high-efficiency filter.

Even with the best dust collectors, you'll still have to contend with airborne particles. So add an air cleaner capable of filtering all the air in your shop every 10 minutes. To determine how much cubic feet per minute (CFM) of airflow you need, multiply the length, width, and height of your shop, and divide that total by 10. Buying the next size larger than necessary helps the cleaner compensate for partially dirty filters.

Don't stop with concern over dust entering your house. Keep it out of your lungs, too, by wearing a tight-fitting respirator—no paper masks—rated to trap 95 percent or more of all airborne dust. Look for filters with a P95, P97, or P100 (the best) rating.

—from the **WOOD®** shop



No single system can capture all the dust from your workshop, even a system that's enclosed. Start by containing dust within your shop, including a frame around the air return to hold a furnace filter **1**. Then capture dust and chips at the source: your tools **2**. Filter out airborne dust with an air cleaner **3**, and wear a respirator to avoid breathing dust while you work **4**.

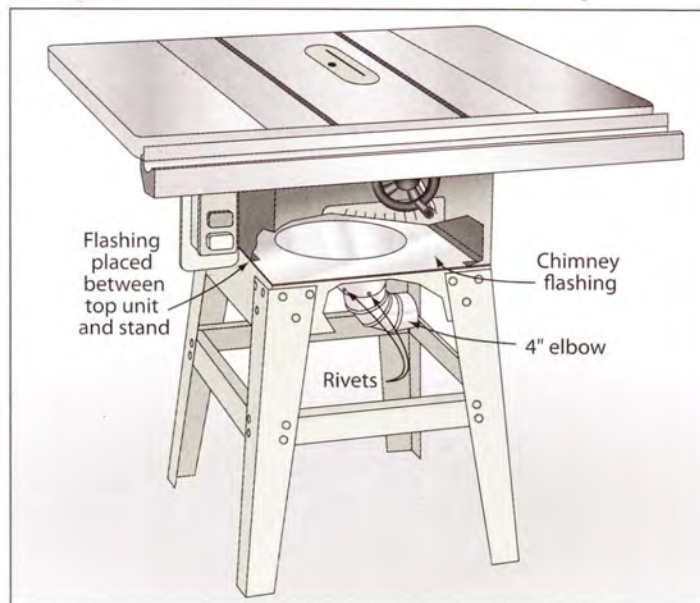
Make contractor-saw dust disappear in a flash(ing)

Capturing dust from my contractor-style tablesaw has always been impossible because of the wide-open bottom. But recently, I spotted an all-metal chimney flashing at a home center and immediately recognized I had my solution.

The flashing has a 16×18" base large enough to fit firmly between the saw's leg stand and the top unit to basically seal the housing. To create a coupling for my dust-collection system, I widened the tapered 3½" opening to 4", inserted a 4" metal elbow, caulked the connection to seal it, and fastened the two together with pop rivets.

The small openings around the blade adjustments provide a little replacement air for better airflow, and I now catch most of the dust that was getting away before.

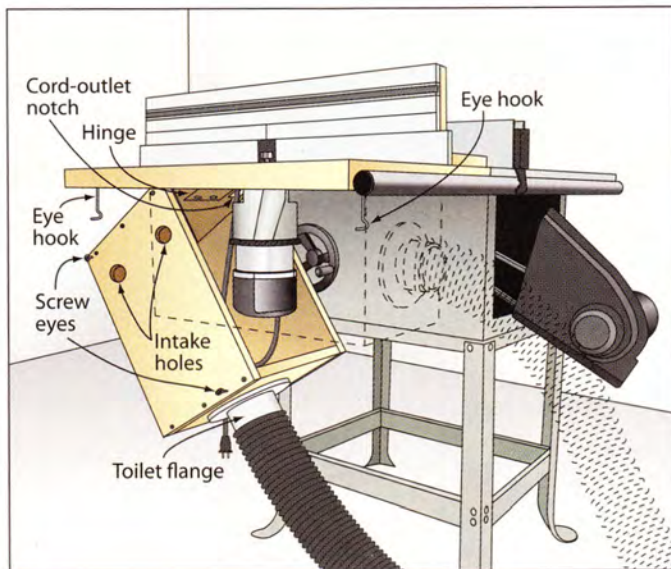
—Erin Bennett, Toledo, Ohio



Router house defeats dust problems

After mounting my router in the extension of my tablesaw, I needed a dust-collection solution that allows easy access to the router for bit-height adjustments. The box shown *below* encapsulates the router and allows the dust collector to create the necessary suction to work well. I used a 3" O.D. (outside dia.) PVC toilet flange to create the dust-collection connection. A hinge secures one end of the housing, and a set of hooks and eyes holds the box open for router access or closed for operation.

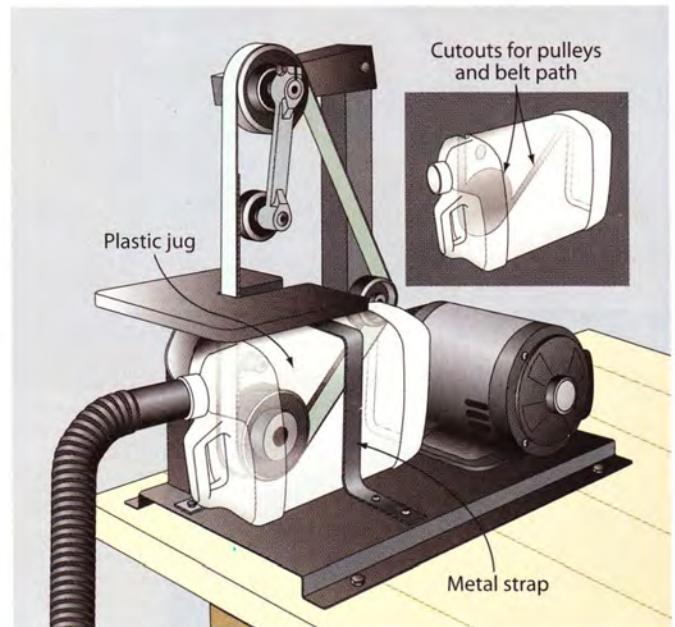
—Steve Conway, Oakdale, Minn.



A gallon of dust collection for an inch of sander

The 1" belt sander was the final frontier of dust collection in my shop. I conquered it using a rinsed-out 1-gallon plastic jug. After some careful tracing and cutting, the jug enclosed the belt and pulleys, and I strapped it to the sander, where shown *below*. When I hooked up my shop-vacuum hose to the jug mouth, it proved a surprisingly effective dust trap.

—Erv Roberts, Windsor Heights, Iowa

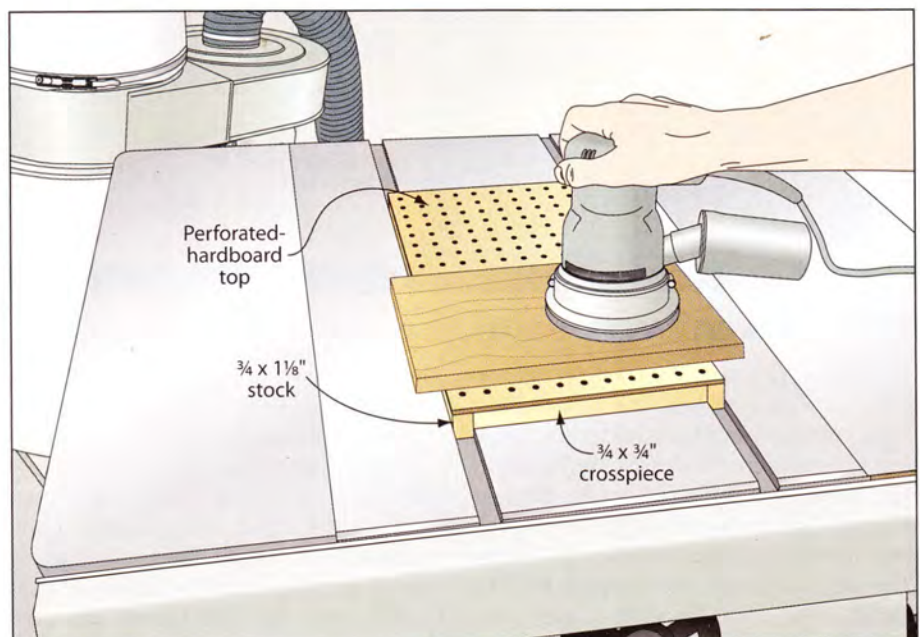


Instant conversion: tablesaw to downdraft table

Here's a quick and easy way to add a downdraft sanding table to your dust-collection system. Cut two pieces of hardwood to $\frac{3}{4} \times 1\frac{1}{8} \times 18"$. Then cut two crosspieces from $\frac{3}{4}"$ stock and assemble the frame, *right*, topping it with perforated hardboard.

Lower the blade on your dust-collector-connected tablesaw, remove the throat plate, and center the downdraft table over the opening. Turn your dust collector on, and you've got an instant downdraft table perfect for sanding small parts.

—Ed Perko, Mercer, Wis.



Shop Setup

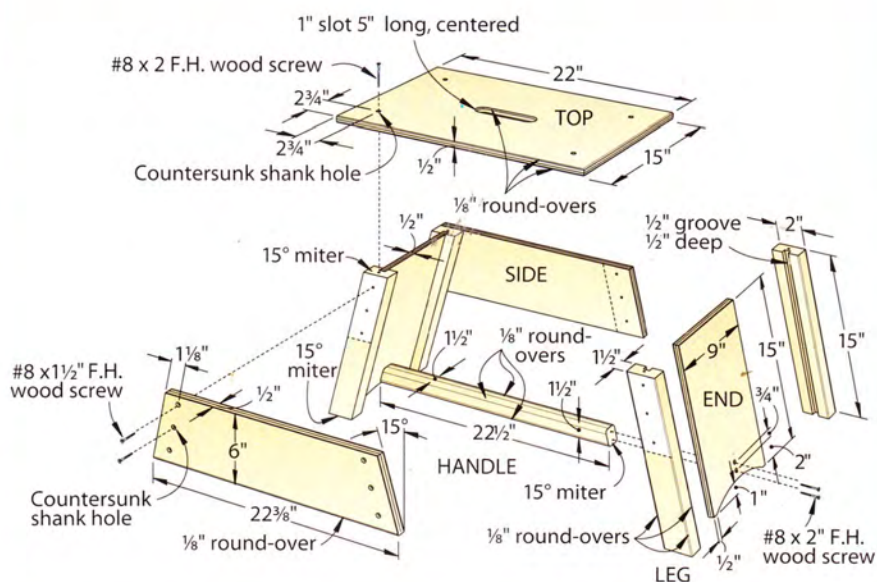
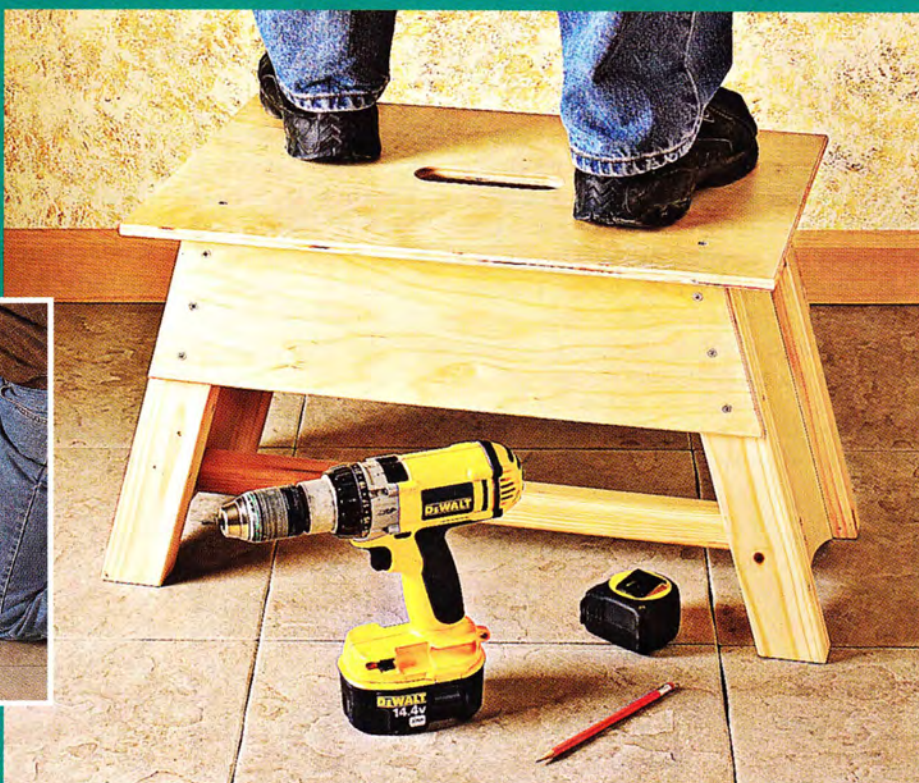


Stool and tool-tote combo

Stand it upright, and you have a sturdy stool for reaching the top of your lumber rack or doing household chores. Flip the stool over, fill it with tools, and you're ready to tackle household repairs anywhere on your property.

To cut the pieces to size and shape, use the dimensions on the drawing, *right*. Miter-cut both ends of the legs at 15°. Use ½" plywood for the top, sides, and ends. For the legs and handle, cut 2x4 stock to size. Cut a ½" groove ½" deep centered along the inside face of each leg. Mark the slot, drill a blade start hole, and cut the handle opening in the top to shape. Cut the arcs in the ends. Rout ⅛" round-overs along the handle opening and on the remaining parts where shown at *right*. Glue, clamp, and screw the project together in the configuration shown. Sand smooth, and add a finish.

—Lynn Lawrenz, Algoma, Wis.



Try a "green" version of the stool

The stool and tool-tote combo shown above was designed so you can build it from commonly available materials. If you have access to construction cutoffs, repurpose that waste by building the project from it. That's how the stool's designer, Lynn Lawrenz, prefers to construct them. "The raw materials are headed for the landfill, until I snag them for stools," says Lynn. "I've given away dozens of them,

always in pairs, because people like to set a plank on top of the stools when spread apart for painting and other chores."

In his version (see photo *right*), the end panels/legs are scraps of 12" engineered I-joists, the cross brace/handle joining them is a 2x2" cutoff, the top is discarded roof sheathing (typically oriented-strand board), and the side panels are cut to shape from spare ½" cabinet plywood.

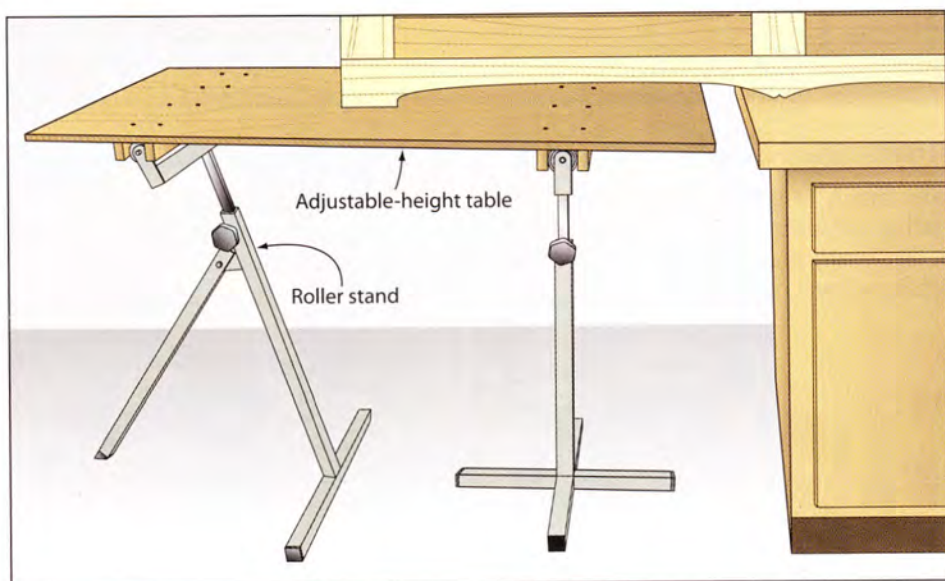
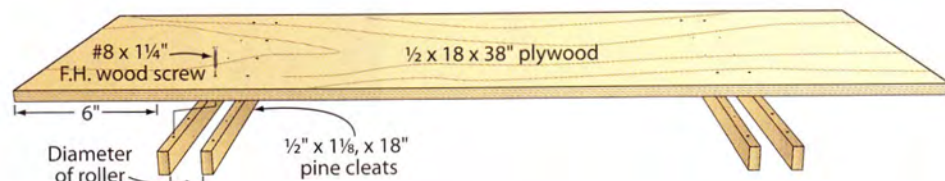


Roll out a just-right-height temporary table

It's always a time-consuming exercise to get a support table to match the height of my workstation when I need extra space. A single roller stand fulfills the height adjustability requirement, but it tends to be unstable for stationary work.

But two roller stands, and a plywood tabletop with channels to fit over the rollers, provides just the right solution. Build the top as shown, and you have a temporary adjustable-height table anytime you need the extra workspace.

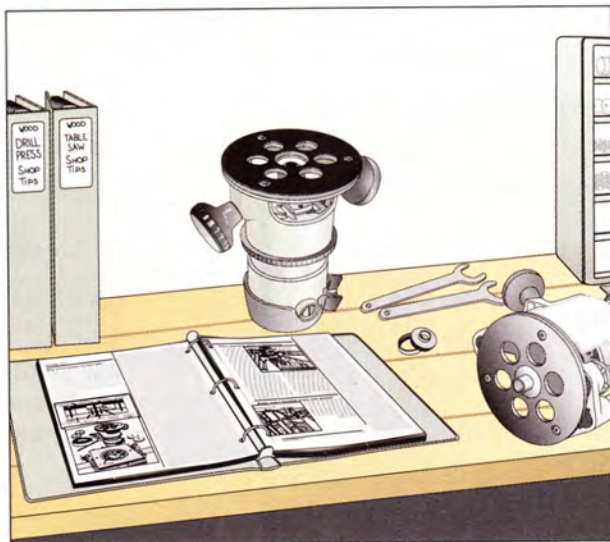
—Allan Rice, Winnipeg, Man.



Classify tips by tool use for quicker recall

Have you ever found yourself thumbing through past magazines trying to find a half-remembered tip? My solution was to photocopy the tips as soon as the magazine arrives, and then organize them according to the tool to which they relate. It's now much easier to look up a tip. Even my woodworking buddies occasionally make use of my tip library.

—Fred Mandel, Dinsmore, Sask.



Rule of thumb guides best workbench height

There's no such thing as one size fits all when it comes to workbench height. An inch or two plus or minus can make a big difference, depending on how your bench will be used.

The standard height of 34" matches most tablesaw heights, allowing the workbench to double as an outfeed support. Many hand-tool woodworkers, though, prefer a bench 1 or 2 inches lower, allowing more leverage for hand-plane and chisel use. If you're mainly a power-tool woodworker, adding a couple of inches might make power-sanding and assembly operations more comfortable.

To select a height to match your stature, use this "rule of thumb": Make your workbench height the distance from the floor to your first thumb knuckle, with your arms hanging relaxed at your sides.

—from the **WOOD®** shop



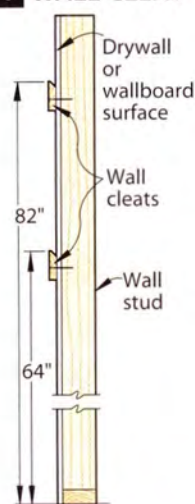
A workbench sized to meet your hand at your thumb's knuckle provides a comfortable working height for a mix of power- and hand-tool woodworking.

Nothing beats cleats

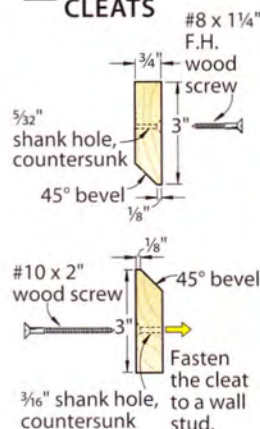
As your woodworking skills grow, your shop should grow right along with them. Fortunately, many shop-storage units can be readily adapted to a system of mating cleats screwed to cabinet backs and walls, *right*. This makes it easy to add new organizers and rearrange existing ones as your shop layout changes. (For an online slide show of wall-hung cleated cabinets and organizers, go to woodmagazine.com/cleatsystems.) In this system, cleats with a beveled bottom edge mounted to the back of a cabinet or organizer grip wall-mounted cleats with a mating bevel. Gravity holds the mating cleats together until you lift off the unit. For typical heights for wall-mounted cleats, see **Drawing 1**. For typical size for cabinet-mounted cleats, see **Drawing 2**.

—from the **WOOD**® shop

1 WALL CLEAT



2 CABINET CLEATS



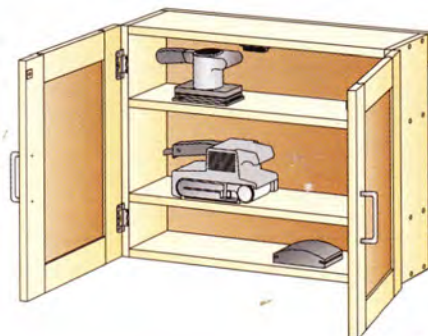
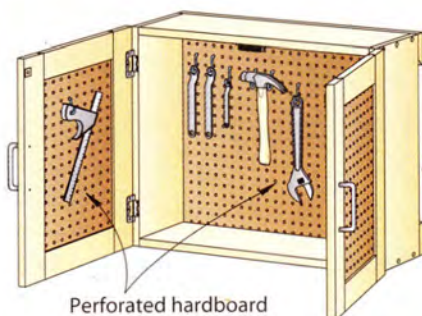
Cleats with mating bevels let you add or move cabinets, perforated hardboard panels, and racks to reorganize your shop.

Build three versions of one cabinet

Building several storage cabinets doesn't take much longer than building a single one. For example, while building a sanding-supplies cabinet like the one shown *below left*, make duplicate case and door parts to create cabinets for other uses,

such as storing hand and power tools or finishing supplies. (Go to woodmagazine.com/sandpapercabinet for plans.) Each hangs on cleats (see *above*) for quick shop reorganization.

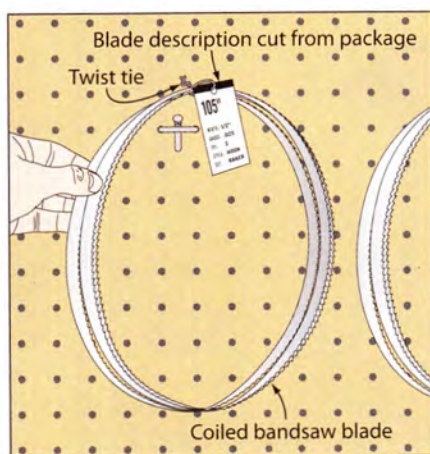
—from the **WOOD** shop



Bandsaw blade badge preserves particulars

To remember the stats (length, width, teeth per inch) of your replacement bandsaw blades, cut the info from the box and affix it to the coiled blade using a twist tie. When you install the blade in the saw, hang the tag from the bandsaw's door handle. It's a helpful reference when you frequently change blades for different uses.

—Kevin Hemmingsen, Wabasha, Minn.



For a video showing how to coil a bandsaw blade, go to: woodmagazine.com/coilblade

Low-cost panel saw

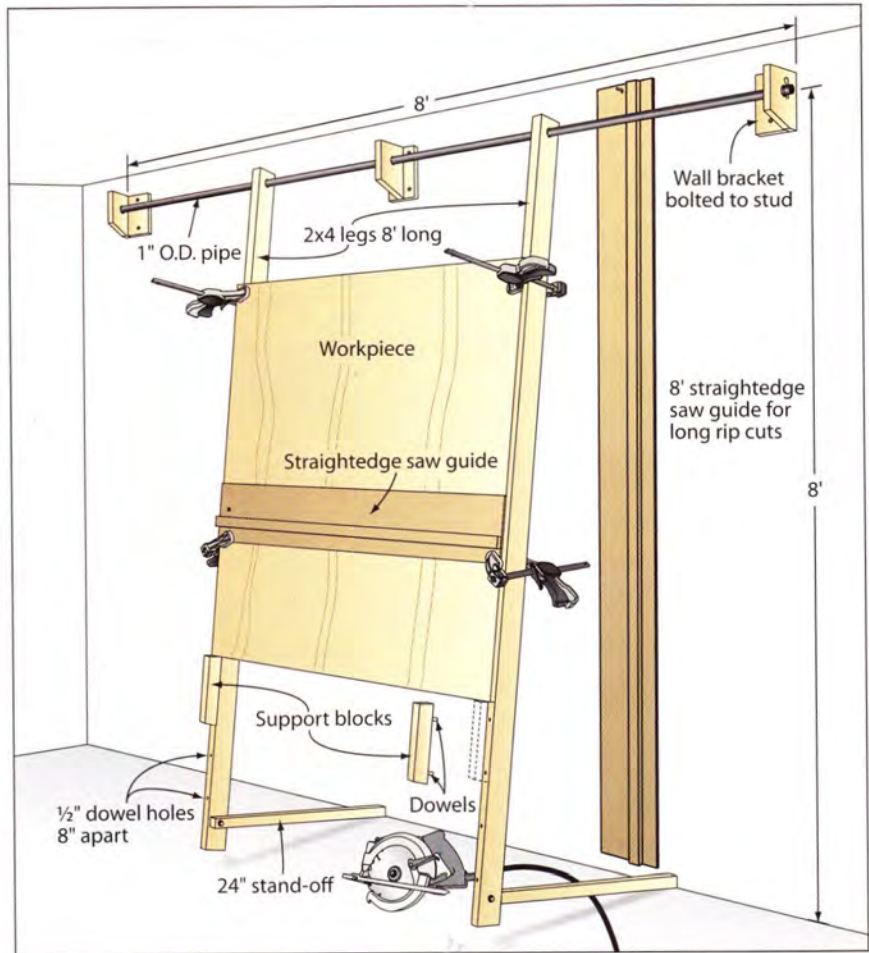
Despite my small shop, I like to make large projects. So to maximize my shop space, I built this inexpensive makeshift panel saw for breaking down sheet goods to rough size.

First, I bolted 2' foldaway stand-offs to the bottoms of 8'-long 2x4 legs, where shown in the drawing, *right*. The bottoms of the legs have $\frac{1}{2}$ " holes drilled every 8" to hold the removable doweled support blocks, where shown. At the tops of the legs, and in three wall brackets lag-bolted to the wall studs, I drilled $1\frac{1}{4}$ " holes to accommodate a 1"-diameter 8'-long iron pipe. After drilling the ends of the pipe for cotter pins, I slid the pipe through the brackets and legs and secured it with the cotter pins.

To use the panel saw, I spread the legs to support the outside edges of the workpiece. For crosscuts in full sheets, I stand the sheet on the floor and clamp it to the legs above the cutline to prevent binding. For partial sheets or for rip cuts, I rest the sheet on the support blocks, which I position at a comfortable height before clamping the sheet to the legs.

To position the saw guide, I fasten a clamp about 9" below the cutline on one side and rest the end of my shop-made straightedge saw guide on the clamp while I position and clamp the other end for the cut. Then I go back and position the first end of the guide.

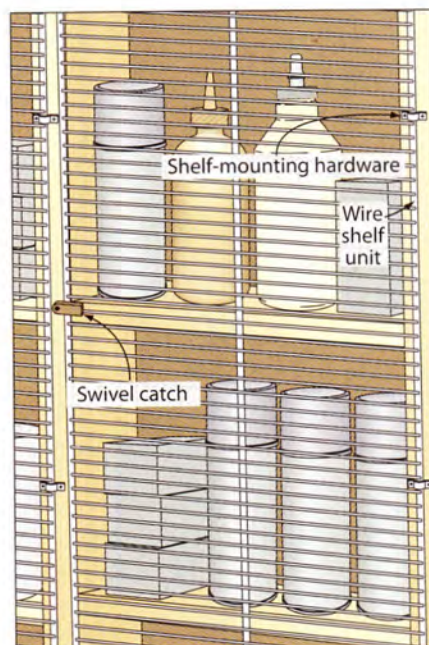
—Bill Anders, Gettysburg, Pa.



Wire shelving secures chemicals

I installed shelving between the open studs of my garage shop to take advantage of the unused space. This leaves everything in open view and easy to spot. However, it also leaves solvents and finishes within reach of small hands so I needed a way to childproof them. That's when I found wire closet shelving at the home center. It comes in 16" widths—the same as standard stud spacing—and can be "hinged" using the included hardware, as shown. They can be locked in an out-of-reach spot with a simple swivel catch or an eye-hook lock.

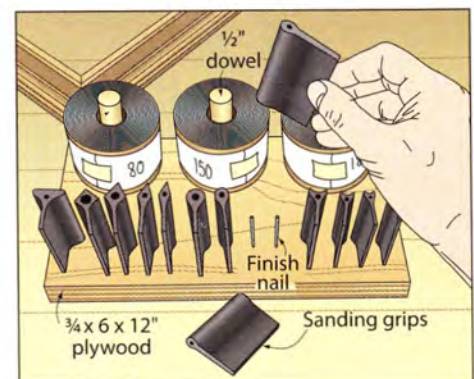
—James Keller, Matthews, N.C.



The devil in the detail-sander storage

I finally got tired of my collection of detail-sander grips rattling around loose in a drawer, so I came up with this simple holder. Finish nails with clipped heads make up the pegs for the grips, and dowels organize the rolls of abrasive.

—Serge Duclos, Delson, Que.



Use (saw) horsepower for lifting sheet goods

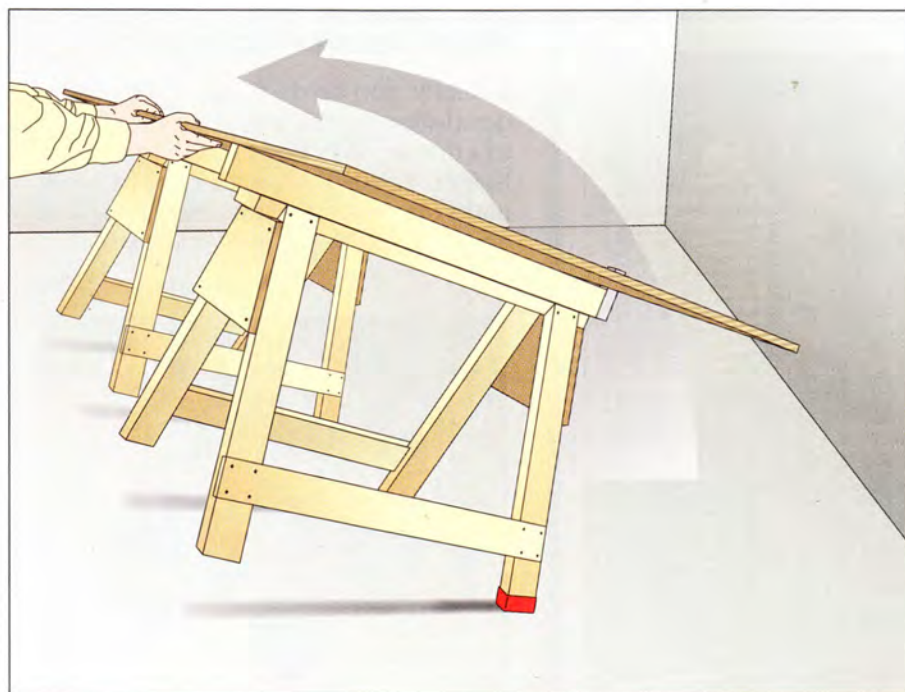
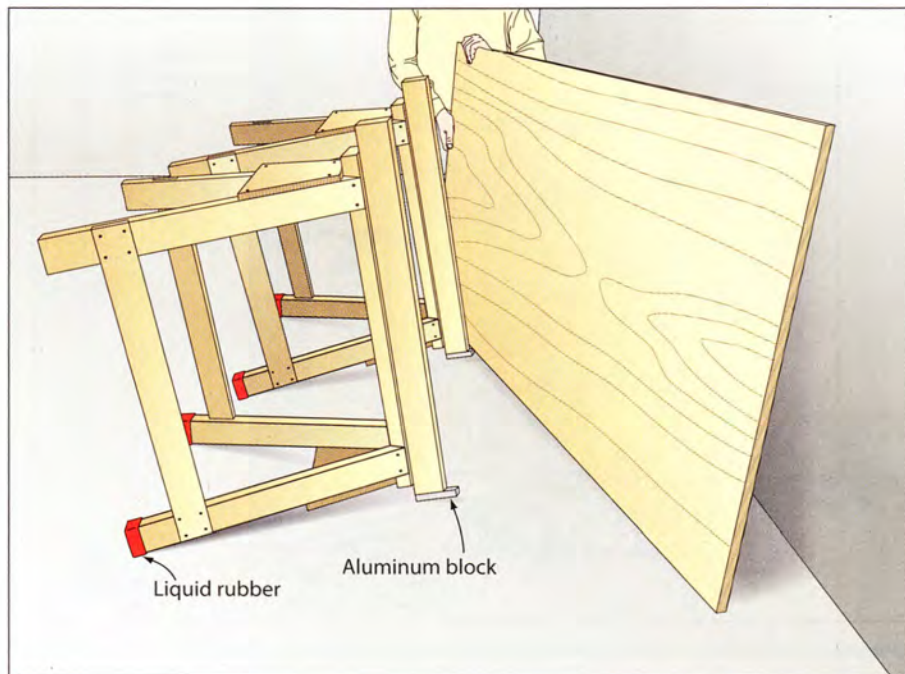
The older I get, the more difficult I find it to handle full sheets of plywood safely. So I made two simple modifications to my sawhorses that let me easily lift a full sheet.

Simply drill and screw an aluminum block onto one end of each sawhorse where shown *below*. Dip the sawhorse feet on that end into liquid rubber, such as Plasti Dip

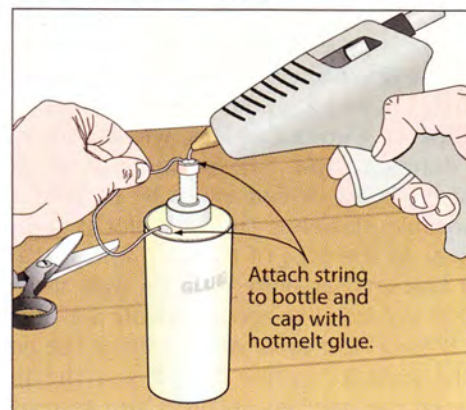
(800-969-5432, plastidip.com), and let them dry to make them skidproof.

To safely lift a sheet of plywood onto the sawhorses, stand the sawhorses on end next to the plywood, place the edge of the plywood on the aluminum blocks, and tip the sawhorses, plywood and all, into the working position.

—John Andrus, Daytona Beach, Fla.



A leash for the glue-bottle cap



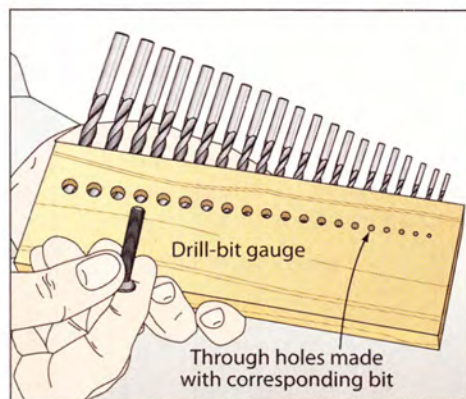
All of us have experienced the problem of the elusive glue-bottle cap. As we work on a project, the cap gets harder and harder to put back on the bottle, so we eventually leave it off. Then it immediately disappears. To solve this problem, I attached the cap to the bottle using a 6" length of string.

—Ron Altier, West Lafayette, Ohio

Never miss a bit with holder-and-gauge combo

Finding the right bit for bolts, dowels, or other hardware couldn't be easier with the combination drill-bit holder and gauge that I made. I simply drilled holes into the edge of a hardwood scrap to hold each bit. Then I drilled gauge holes of the same size through the face of the holder centered on the bit holes. The bits block the gauge holes, but I can quickly slide bits out of their holes to fit a piece of hardware through the gauge holes. When the hardware fits the hole, the bit in my hand is the winner.

—Rick Hutcheson, Grimes, Iowa



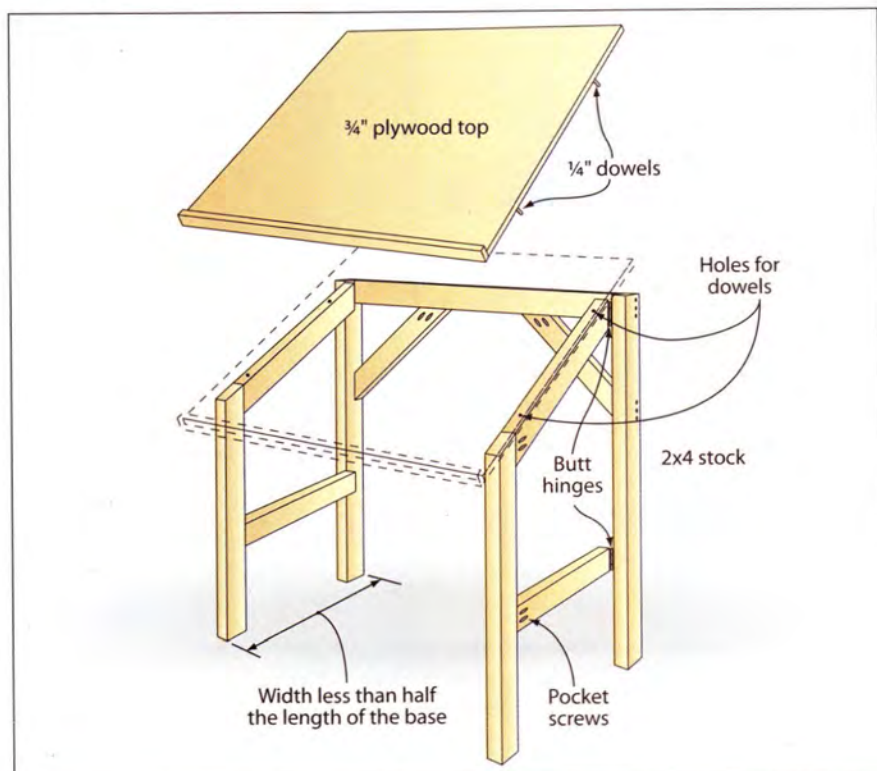
Pack-along worksurface

As a contractor, I grew tired of kneeling on the floor or leaning over the hood of my pickup to review construction drawings. So I built this cheap field table from on-site scraps.

Pocket screws hold the sides and back together. Hinges allow the entire

thing to fold flat at the end of the day. Dowels underneath the plywood top drop into holes in the angled top rails to hold the temporary worksurface together.

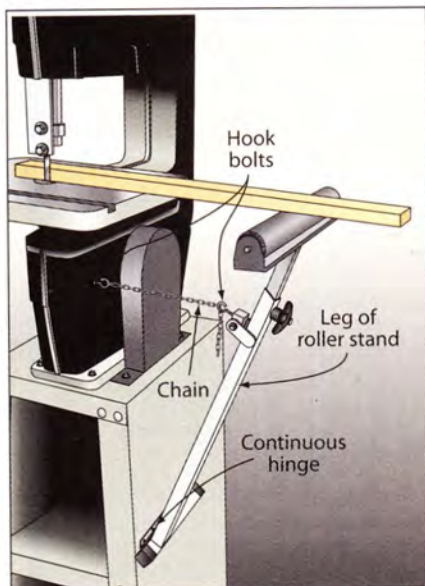
—Ken Rexing, Evansville, Ind.



Stowaway stock support tucks in tight spaces

I don't have room for a dedicated bandsaw outfeed support, so this stowable roller is just the ticket. To make it, I sacrificed an adjustable roller stand by removing the stationary leg, and shortening one foot of the adjustable leg so it didn't stick out from the bandsaw base. Then I mounted the stand on the bandsaw base with a continuous hinge. A lightweight chain between the bandsaw and the outfeed stand allows me to extend the support, or stow it against the bandsaw.

—Curtis Simpson, Anaheim, Calif.

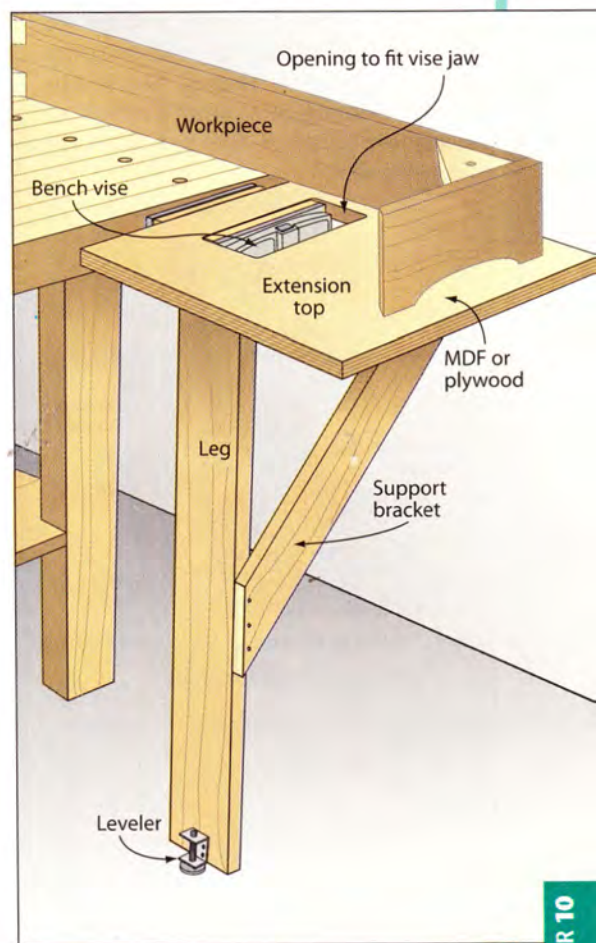


Workbench expansion gives you a leg up

When I was building a corner cabinet, I realized my workbench wasn't quite wide enough for the project. To solve the problem, I enlisted my bench vise to create a temporary workbench addition, where shown below.

The extension top is a separate compact table that's quickly but firmly held in place by the vise. To install it, I first use the bench vise to align the surface of the extension flush with the surface of the benchtop. Then I use the leg leveler to firmly position the rest of the extension and take some of the pressure off the vise.

—Dave Wywiał, Janesville, Wis.



Find more free plans for your shop at woodmagazine.com/freeplans

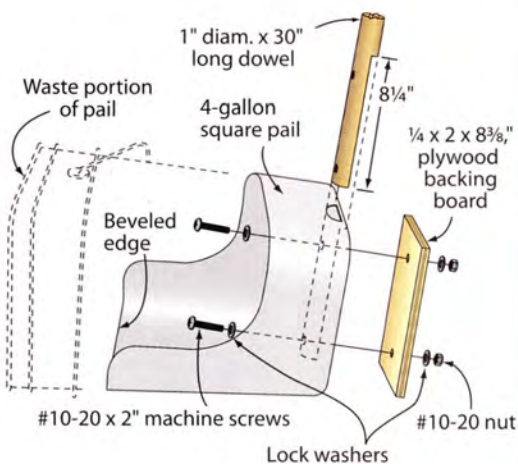
Back-saving dustpan for pennies

This stand-up dustpan, made from salvaged parts, is easy on both your back and wallet. Cut the body of the dustpan from a square-bottom plastic pail used for everything from cat litter to bulk food items. (You can often get free ones from doughnut shops, delis, bakeries, and restaurants.)

The plywood backer prevents the fasteners from pulling through and protects the plastic from fatigue. The handle for my dustpan came from a broken snow shovel, but any handle or dowel will work. After cutting the handle to length, use your bandsaw to cut a $\frac{1}{4}$ "-deep $\times 8\frac{1}{4}$ "-long notch in one of the ends.

Mark and cut the pail to the profile shown, using either a pair of snips, or a rotary tool with a general-purpose cutting bit (such as Dremel 561 Multi-Purpose Cutting Bit). Sand a bevel on the leading edge of the pan for easy dust sweep-up.

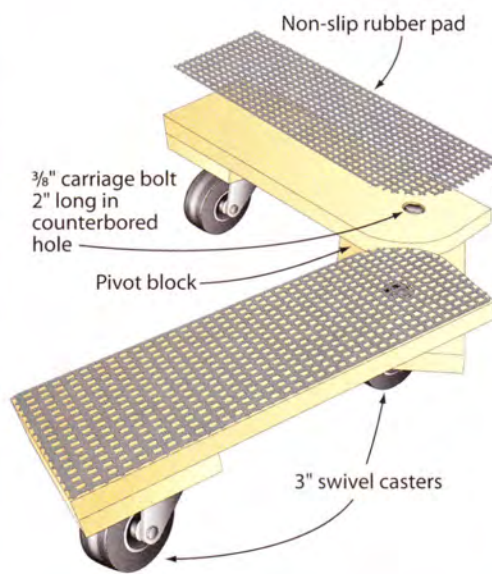
—Raj Chaudhry, New York City



Fold-away lumber trikes

These lumber trikes work perfectly for moving sheet goods or stacks of lumber around your shop. When not in use, the trikes fold away, taking up little space.

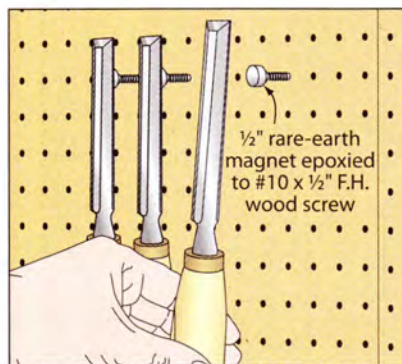
—Dick Ayers, Barron, Wis.



No-hook hangers for perforated hardboard

Tool hooks seem to come off perforated hardboard as easily as the tools they hold, so I came up with a different solution. I epoxied $\frac{1}{2}$ " rare-earth magnets to the heads of $\#10 \times \frac{1}{2}$ " flathead screws. These thread easily by hand into typical $\frac{1}{8}$ " perforated-hardboard holes. I use them to hold chisels, screwdrivers, squares, files, and wrenches.

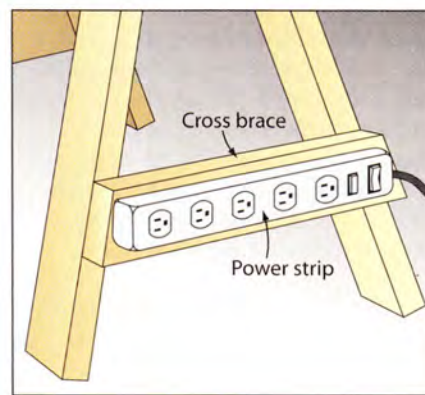
—Mark Thiel, Coral Springs, Fla.



A new definition of "horsepower"

To make sawhorses more convenient and eliminate tripping over power cords running to tools, I mounted a power strip to the cross-brace. This means I only have to snake one extension cord to my work location, but I can work with multiple tools without constantly bending and chasing down the plug.

—Ron Whittemore, Rehoboth, Mass.

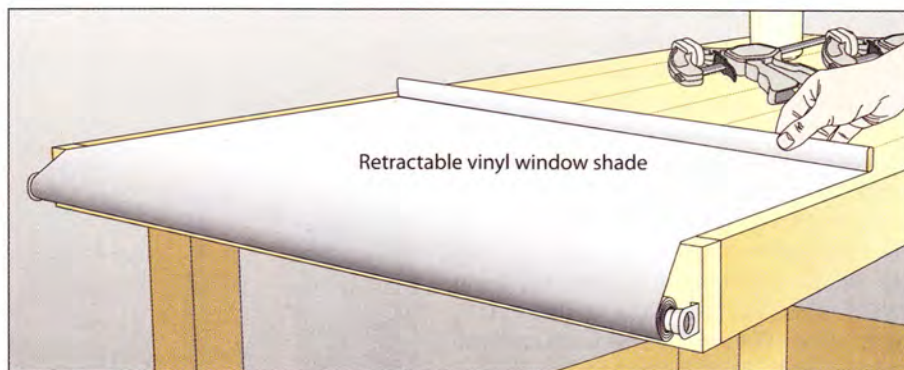


It's curtains...er, shades...for you, workbench spills!

To keep my workbench free of paint and varnish spills as well as glue drips, I mounted a retractable vinyl window shade to one end. Before a messy operation, I pull the shade across the bench and clamp the end to the bench and clamp the end to the bench.

Cleanup is a snap. I simply let the mess dry and retract the window shade. Much of the dried drippings peel off as the shade rolls up.

—John Larson, Coon Rapids, Minn.

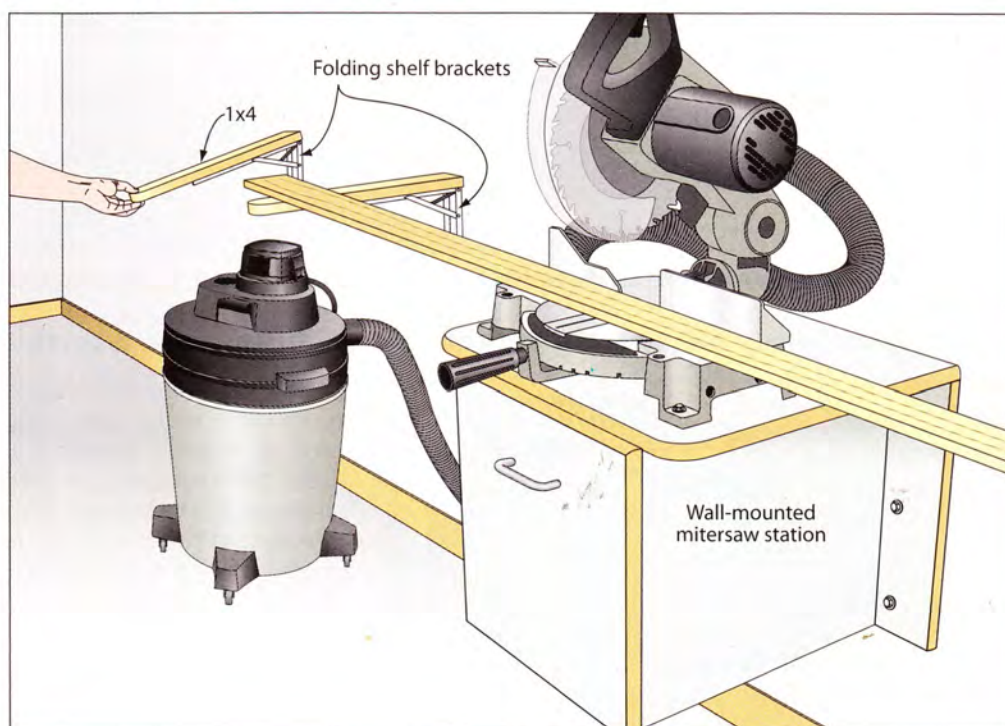


Free up floor space with fold-down stock supports

When I revamped my shop, I wanted to put my miter saw where it wouldn't take up space on my workbench but would still be handy. So I built the simple wall-mounted miter saw station shown. It frees my benchtop and makes it easier to sweep up my shop.

What I gained in benchtop space, though, I lost in workpiece support. My solution: folding 12" shelf brackets (\$15 each, item #128944 from Woodcraft, 800-225-1153 or woodcraft.com). It takes only seconds to lock them in place or fold them out of the way. I added a 1x4 board to the top of each bracket and then mounted them so they match the height of my miter saw's table.

—Fred Hand, Payette, Idaho



Open the door to a quick, flat assembly table

Flat, square projects start with a flat worksurface. Make one by laying a door across two sawhorses. A hollow-core door is stiff and flat, yet light enough that one person can lift it easily. And it stores flat against a wall.

Check for a slightly damaged door at a home center—it will serve well as a temporary workbench and cost less.

—from the WOOD® shop



More Terrific Shop Setup Tips

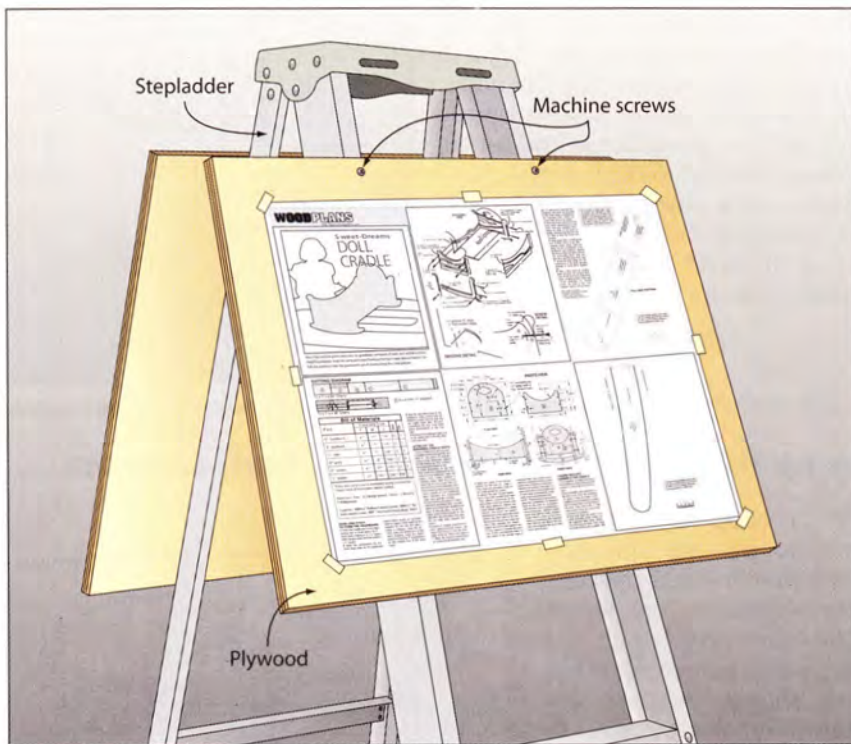


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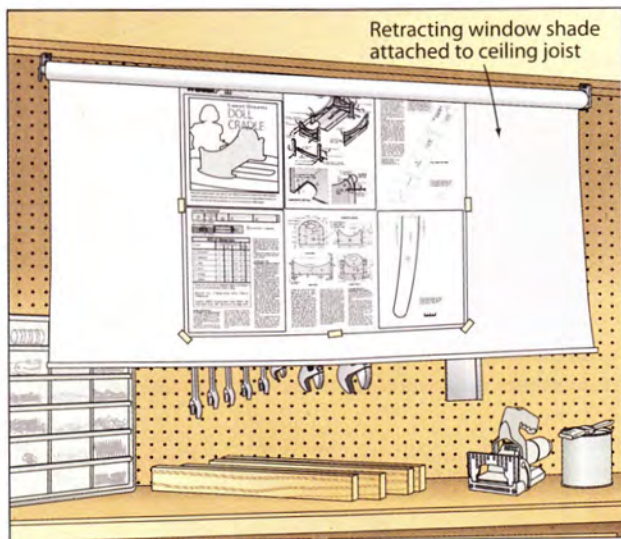
Plan easel is a step up

The plans for a woodworking project came printed on a 2x3' sheet of paper and were accompanied by about 10 pages of instructions. I wanted to keep everything handy for reference, but there is nowhere near the amount of vertical or horizontal space in my shop to display the plans. The solution: a temporary easel quickly constructed from an aluminum stepladder, a couple of 2x3' pieces of plywood, and a few machine screws. I taped up the plans to put everything in view. The ladder still folds to store out of the way. Or if I need to use it as a ladder, it's no problem to quickly remove the screws.

—Joel Simmons, McDonough, Ga.



Project plans ready for the big screen



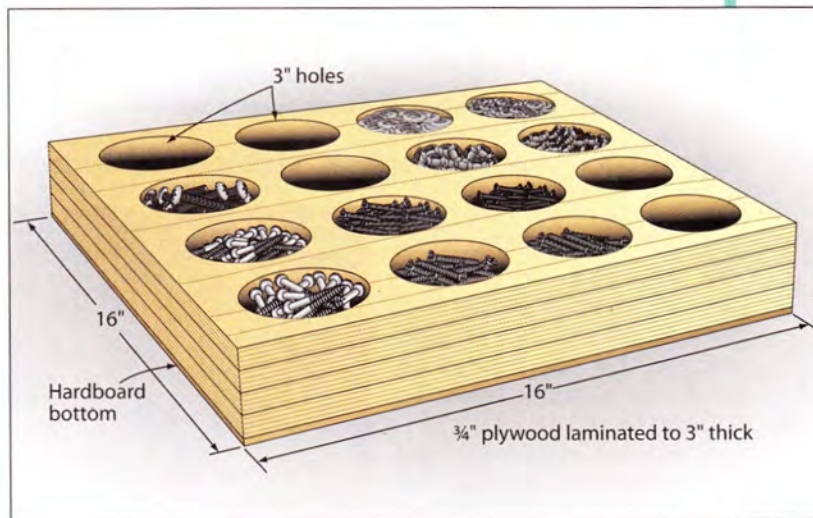
Like most people, I have trouble finding space on the workbench for all the plans, parts, and tools required for a project. To get my plans out of the way but still keep them accessible, I hung a 48" retracting window shade from a ceiling joist. I tape the plans to the shade and, when I need them, they are only a "pull" away. The shade not only stores the plans and provides easy viewing, it preserves them from the usual wear and tear that takes place in the workshop.

—Don Loeffler, Menomonee Falls, Wis.

A "hole" new way to store loose screws

I'm sure I'm not alone in having a large assortment of screws in my shop. Here's how I organized them: I laminated four pieces of $\frac{3}{4}$ x 16 x 16" plywood. Then, I drilled a grid of 3" holes at the drill press using a holesaw. Finally, I glued a piece of hardboard to the bottom, and once the glue dried, I filled the organizer with screws. It fits nicely into a workbench drawer, keeping the screws close at hand and easily viewable.

—Joe Bamlett, Calgary, Alta.

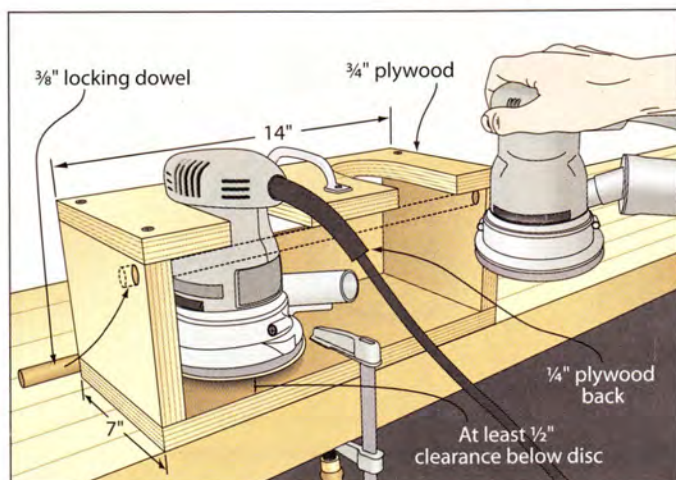


Sturdy stand stores spinning sanders

I normally use two orbital sanders at a time, each with a different grit. The stand shown here has custom-size cutouts to hang my sanders while still spinning after shutdown. I clamp the stand to a bench, as shown, to hold it securely.

When not in use, the sanders store nicely in the stand. A handle makes it easy to carry, and a locking dowel keeps the sanders in place in transit. My 14"-wide and 7"-deep stand will accommodate most 5" random-orbit sanders, but your stand's height will depend on your sanders.

—John Monroe, Greensfork, Ind.

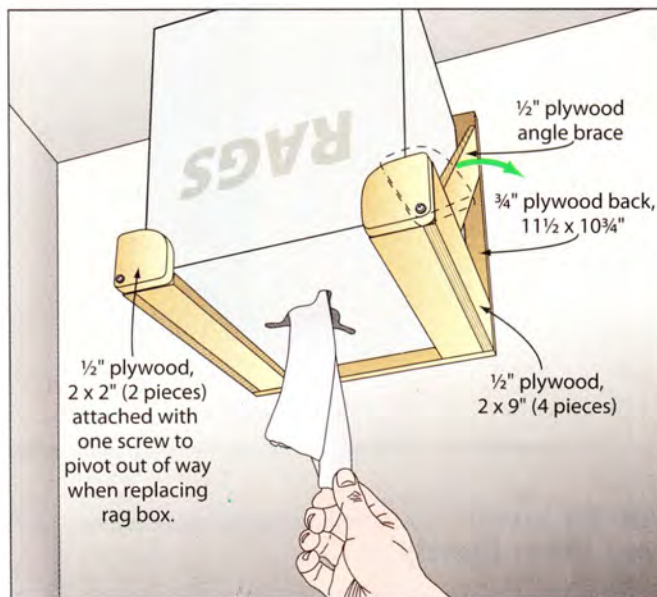


Secure the bouncing rag box

While finishing some cabinets in my shop, I reached back to pull a heavy-duty paper towel out of its box. Unfortunately, the entire box followed and knocked over the open container of finish. While cleaning up the gooey mess, red-faced and frustrated, I resolved to fix the problem of the bouncing box.

The result was the wall-hung box holder seen here. If you mount the box upside down in a high location, you'll be pulling against the box every time you reach for a rag. And the box will remain secure down to the very last rag.

—Richard Shahan, Edina, Mo.

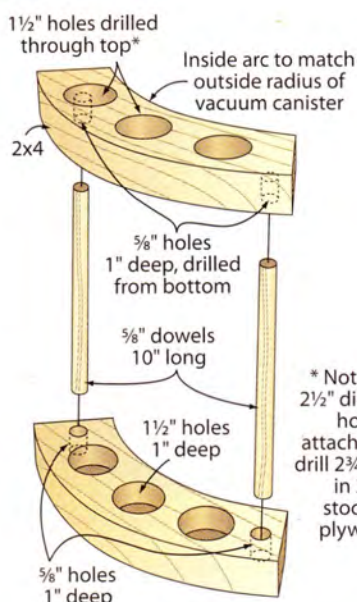


Wet/dry vac rack reins in wandering attachments

One of the most valuable tools in my shop is the wet/dry vacuum. However, like lost socks in a dryer, I had a serious problem keeping track of the various attachments. My solution was to build the wooden rack shown at right to provide a stable home for the wandering attachments.

I cut the curved rack parts for my 1 1/4"-diameter vacuum accessories from scraps of 2x4; for 2 1/2" accessories, you may need to go with 2x6 stock. (The arc of your vac canister also figures in here, too.) Your best bet is to create a cardboard template to fit the contours of your canister. After assembly, secure the rack to the vac with stretch cords attached to the dowel rods.

—Charles Beach, Morganton, N.C.



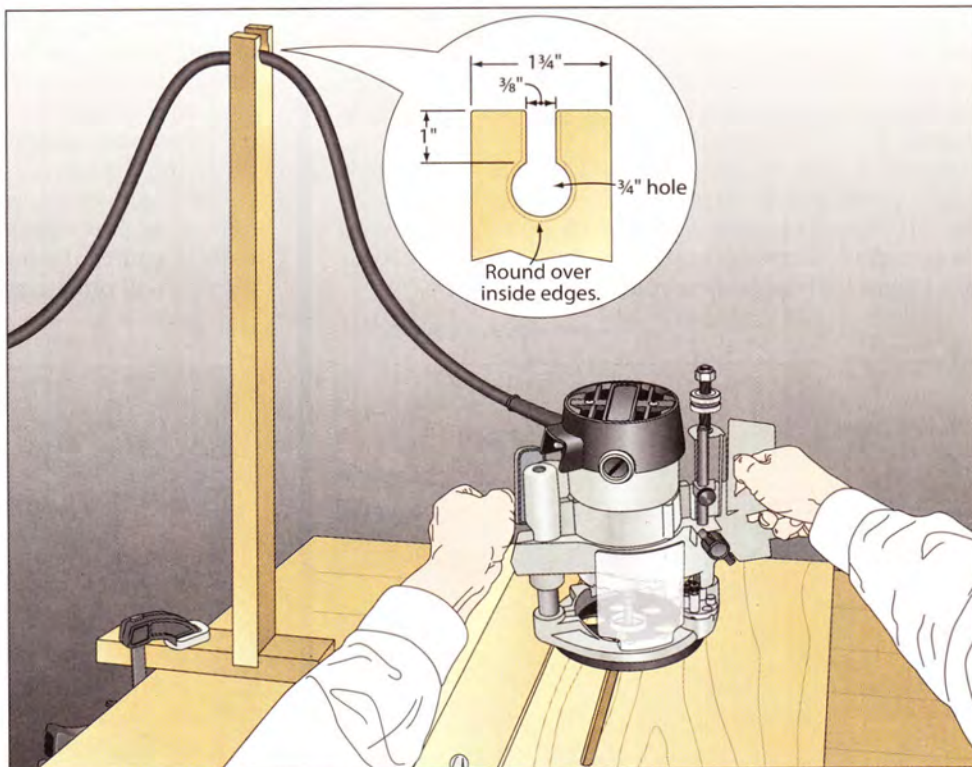
* Note: For 2 1/2" diameter hose attachments, drill 2 3/4" holes in 2x6 stock or plywood.



Diagnosis: Cord trouble. Prescription: Elevate it.

For years, I've used my shoulder as a cord manager while routing or sanding. When I finally got tired of the cord slipping into the tool's path or catching on inconvenient corners, I built this cord minder. I drilled and cut a slot in the top, as shown, rounding over the inside edges to ease cord movement. With the cord minder clamped to the bench and the cord draped through the slot, the cord stays elevated and out of the way.

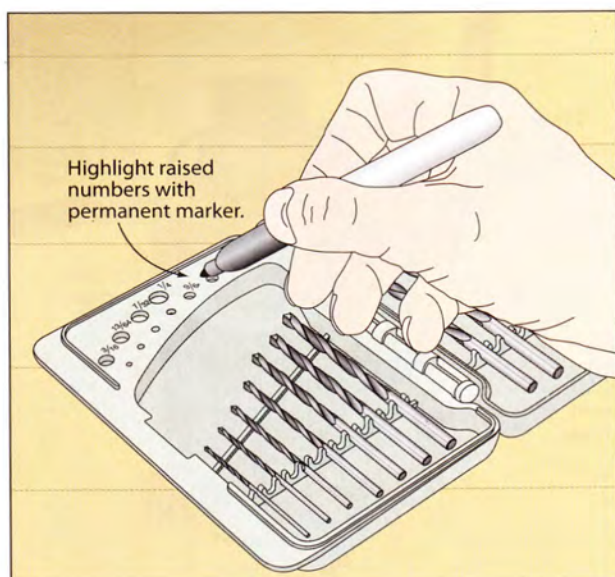
—Raj Chaudhry, New York City



Drill-bit sizes: color them lightly

The tiny raised lettering on my plastic drill-bit case that indicates the drill-bit sizes proved difficult to read. I fixed this by simply coloring them lightly with a black permanent marker.

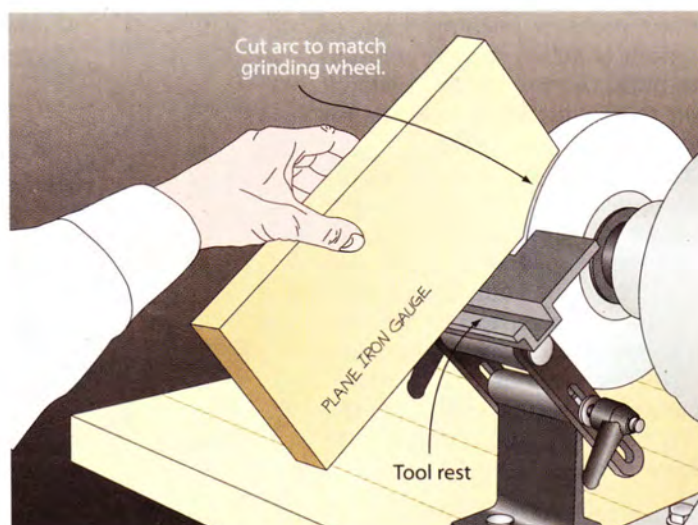
—Emilie Redelman, Greensburg, Ind.



At-a-glance grinder gauge

Here's a simple way to reset your grinder's tool rest to the correct angle. After adjusting the angle just where you want it, lay a scrapwood block on the table alongside the grinder wheel and trace the curve of the wheel onto the block. Saw just on the waste side of the curved line, and then "grind" the shape of the wheel into the curve for a perfect fit. Next time you need to sharpen that tool, use the block as a gauge to position the tool rest.

—Carl Johnson, Elmhurst, Ill.



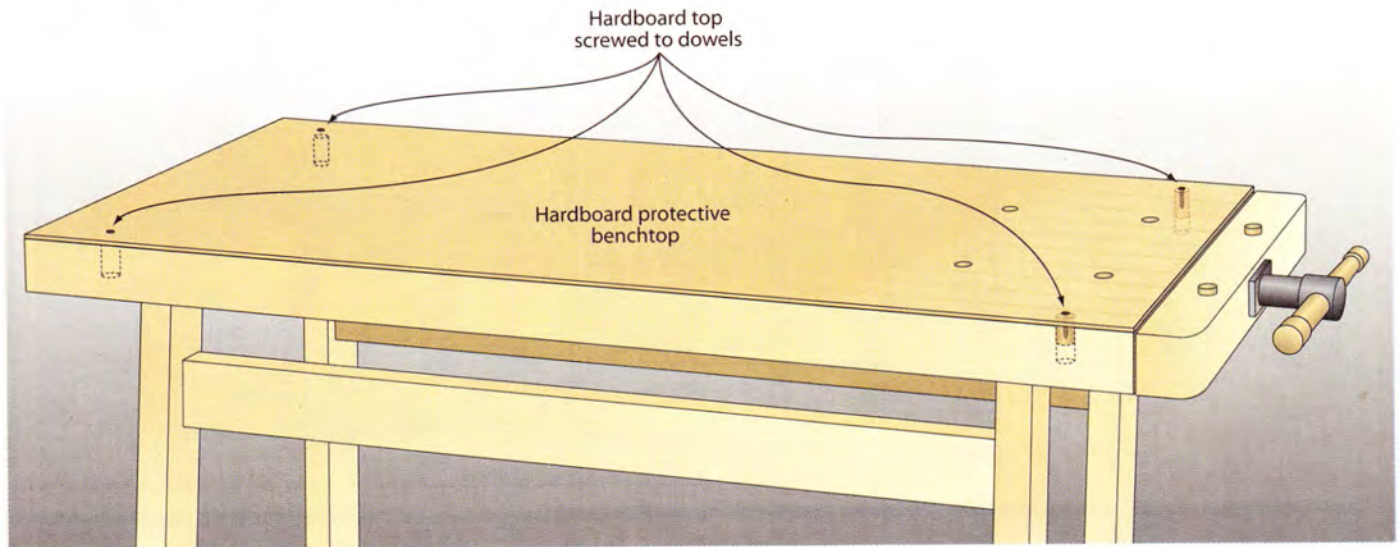
A hard hat for your benchtop

With all the time and money invested in the solid-maple top of my workbench, I want to protect it for as long as possible. So for potentially damaging tasks, this 1/4"-thick, removable hardboard top protects the maple. After cutting the top to size, I clamped it to

my table and used a Forstner bit to drill up through my bench's dogholes—that is, all but the four in the corners. On those, I marked the center using the spur of the Forstner bit, and then screwed 3/4" dowels, 1" long, centered, on those marks.

Now, I can quickly move the protective top on and off as needed. When it wears out, it is easily replaced.

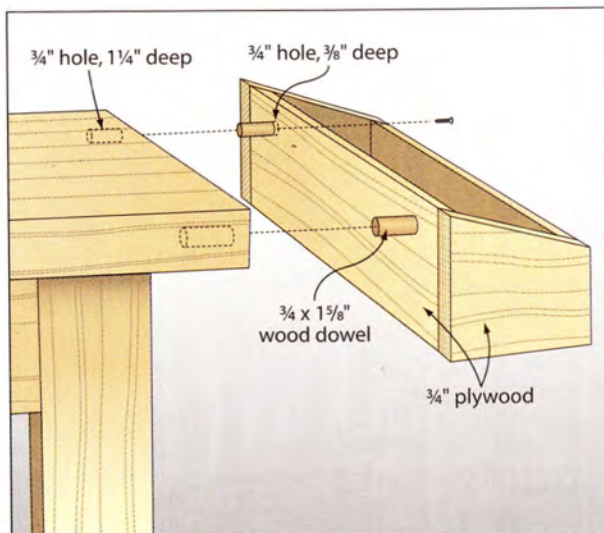
—Stan Morgan, Mapleton Depot, Pa.



Tool storage is a real cliff-hanger

I came up with this tray that mounts to the edge of my workbench to provide extra storage for hand tools, preserving valuable benchtop real estate. If I need it out of my way, the tray slides right out. To mount your own tray, simply bore 3/4" holes 1 1/4" deep to accommodate the dowels in the back of the tray.

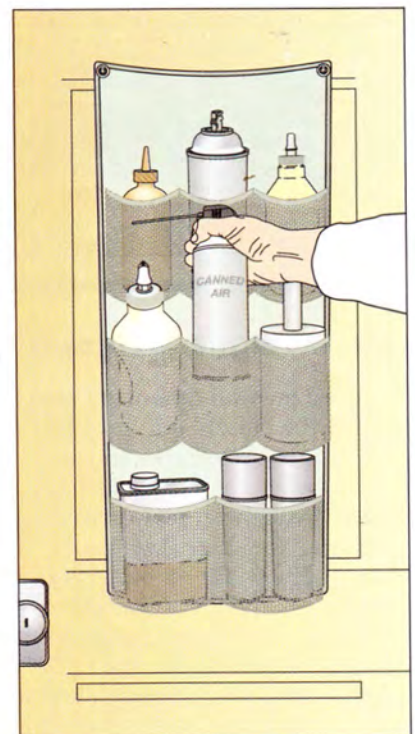
—Mark Thiel, Coral Springs, Fla.



Shoe organizer turned glue organizer

Don't let your shop door go unused as storage space. I took my daughter's old wall-hung mesh shoe organizer and secured it to the door with a couple of screw hooks. Now it holds glues, compressed air, and spray finishes—any small container, really.

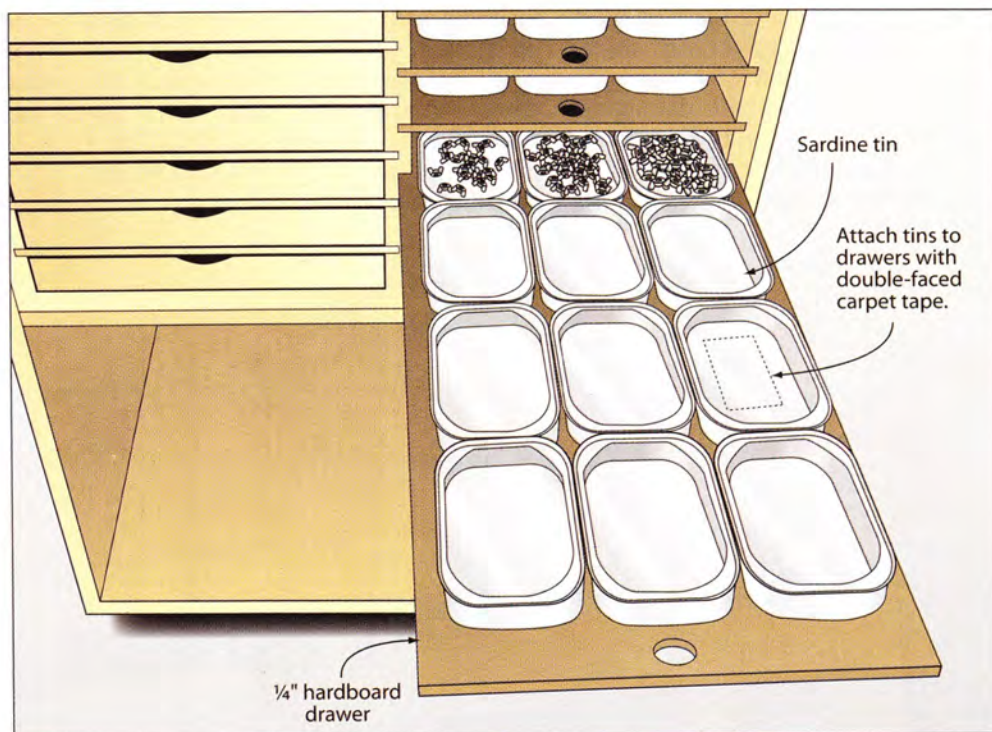
—James Pruett, Rutherfordton, N.C.



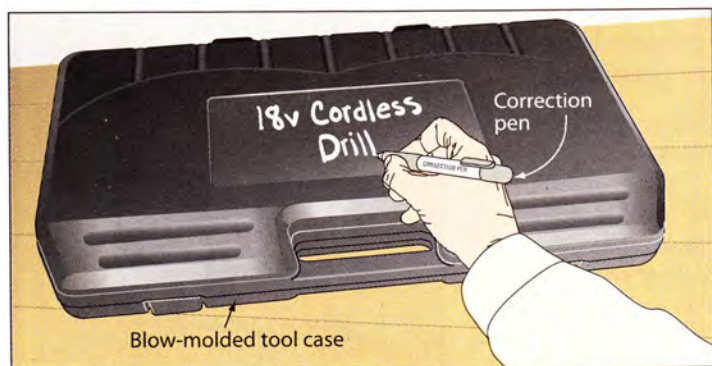
Nothing fishy about these hardware bins

Here's my take on a low-dough hardware storage system. This cabinet has hardboard drawers that ride in $\frac{1}{4}$ " slots. Sardine tins (thoroughly cleaned and sharp edges filed, of course) double-faced-taped to the drawers hold the containers. Of course, if you don't like sardines, you could substitute mint tins or inexpensive plastic food-storage containers.

—Serge Duclos, Delson, Que.



Correction pen ends the old shell game



Many portable power tools come with blow-molded tool cases that protect the tools and keep their accessories organized. But after you've collected quite a few of these cases (and many of them are dark, with few identifying features), confusion starts to gain a foothold. For easy identification of the hidden treasures, I mark the name of the case's contents with a correction pen. The white ink is durable and contrasts nicely with the dark case for easy tool identification.

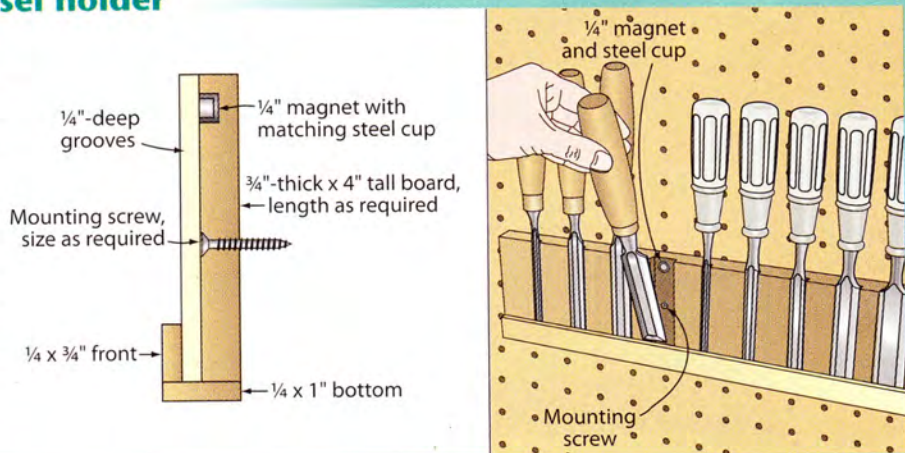
—Jack Ipson, Highlands Ranch, Colo.

Space-saving, edge-guarding chisel holder

I redesigned my wall-mounted chisel holder so it protects the chisels' cutting edges, but only requires minimal clearance above the handles.

In each chisel slot, I drilled a hole to accommodate a $\frac{1}{4}$ "-diameter rare-earth magnet with a matching steel cup (Lee Valley Tools, no. 99K33.10, \$3.60 for 4 sets, 800-871-8158, leevalley.com). When mounted to the wall, the magnets secure the chisels with the cutting edges protected, but the chisels lift out easily without interfering with any tools that are mounted above.

—Bob Catterson, Pewaukee, Wis.

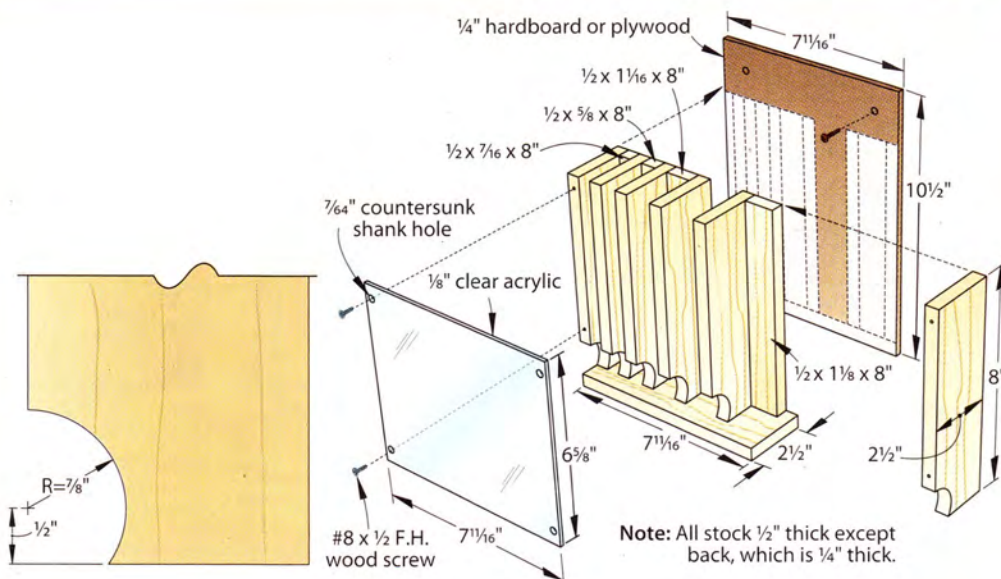
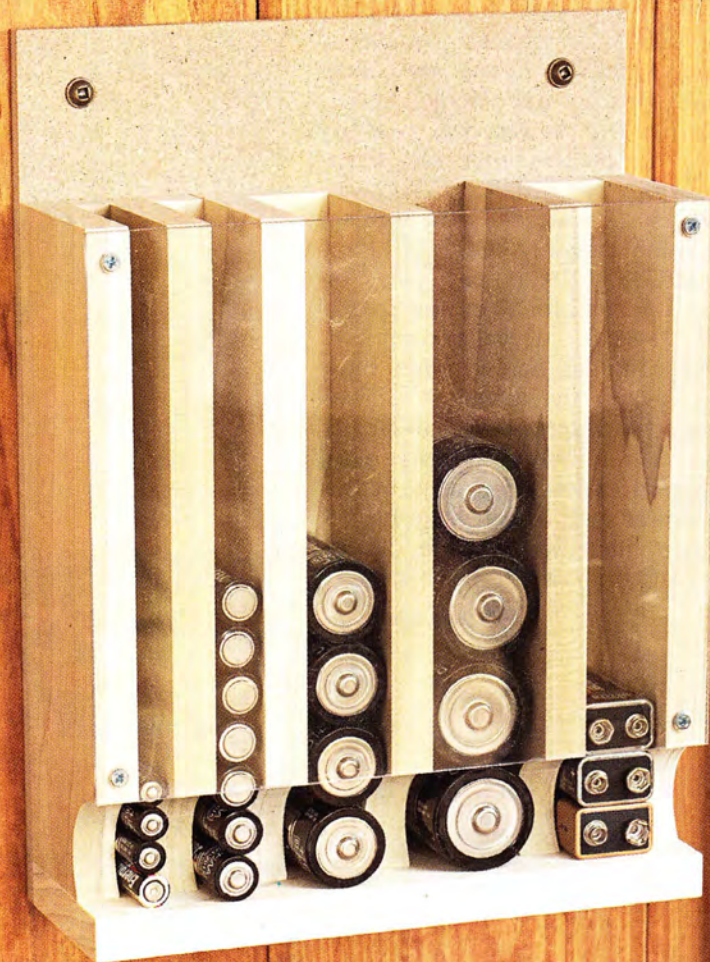


More Terrific Tips

Drop-down battery dispenser

If you're tired of digging through drawers and cupboards to find the right-size battery, build this handy organizer and keep fresh power just an arm's reach away. This one fits AAA, AA, C, D, and 9V sizes. You can easily customize the slots to fit whatever batteries you use the most. The $\frac{1}{8}$ " clear-acrylic front lets you know when the supply gets low.

—from the **WOOD** shop



Save steps with two-way slides

The middle of your shop makes a handy location for your workbench surface—except when you're on one side and the drawers you need to access are on the other. Save extra footwork by installing two-way drawers. Lee Valley sells regular-extension two-way slides 38" long (#02K0738, \$19.20 per pair, or \$16.85 per pair for 10 or more pairs; 800-871-8158, or leevalley.com).

For a simpler, hardware-free solution, adapt the two-way drawer design shown at *right*. The full-length drawers slide out from either side, riding on two wooden strips at the bottom of each drawer opening. To support their weight, the drawer sides and fronts are $\frac{3}{4}$ "-thick stock.

—from the **WOOD** shop

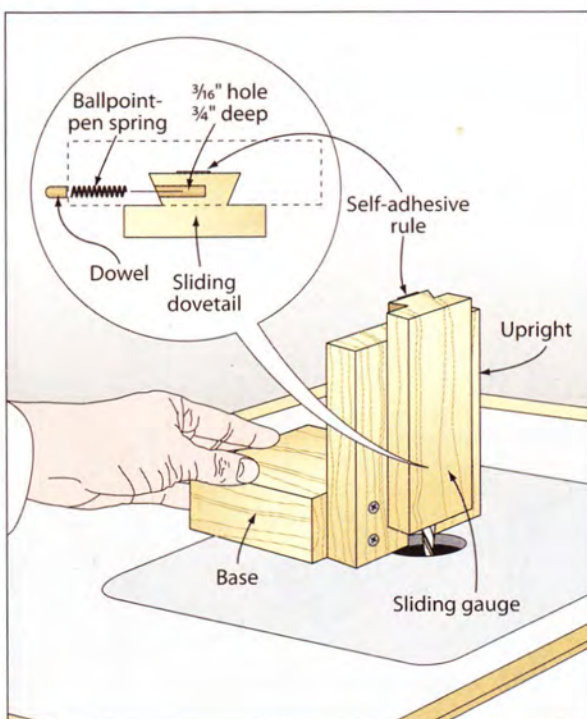


Easy multitasking height gauge

After trying numerous store-bought blade- and bit-height gauges, I came up with my own simple version that works great for multiple tools: table-saw, router table, plunge router, etc.

The hardwood base holds an upright that's grooved vertically to mate with a sliding dovetail. Size the dovetail on the sliding gauge so that it slides freely. Attach a self-adhesive rule to the face of the dovetail. Then drill a $\frac{3}{16}$ " hole, $\frac{3}{4}$ " deep in one side of the dovetail to fit a ballpoint-pen spring and a small dowel. This gives the gauge a friction fit to hold it at a set height.

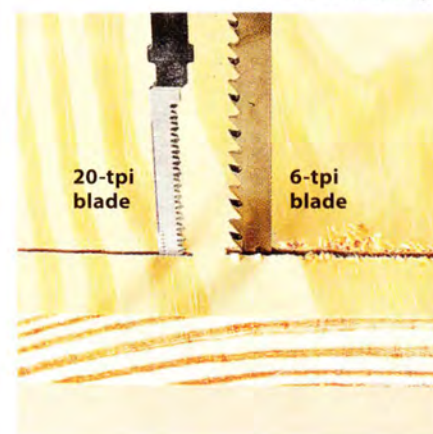
—Junior Strasil, Falls City, Neb.



Fine teeth cut cleanly

A jigsaw may not leave the clean, square edges of a bandsaw, but the right blade can bring it pretty close. Instead of 6- or even 10-teeth-per-inch (tpi) blades, use a 20-tpi blade with a narrow body. You'll get less tear-out, and the narrow body does a better job in tight curves.

—from the **WOOD** shop

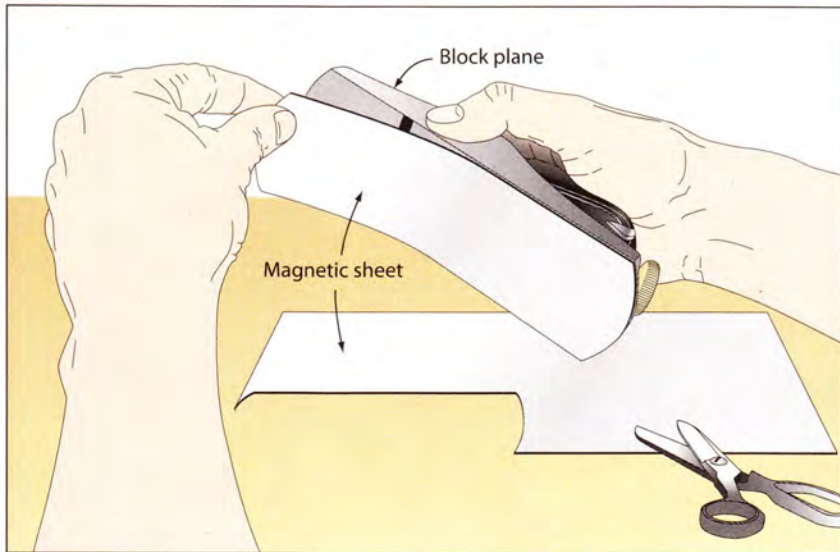


Slick cover for your hand planes

To protect the blades and soles of your hand planes when not in use, pick up a sheet of magnetic air-duct grill cover from the hardware store. Trace the shape of the plane sole on the

magnetic sheet and cut it out with scissors. Your new magnetic cover shields the blade and sole from bumps and jostles, even in the bottom of a toolbox.

—Gary Walsh, Elgin, Ill.

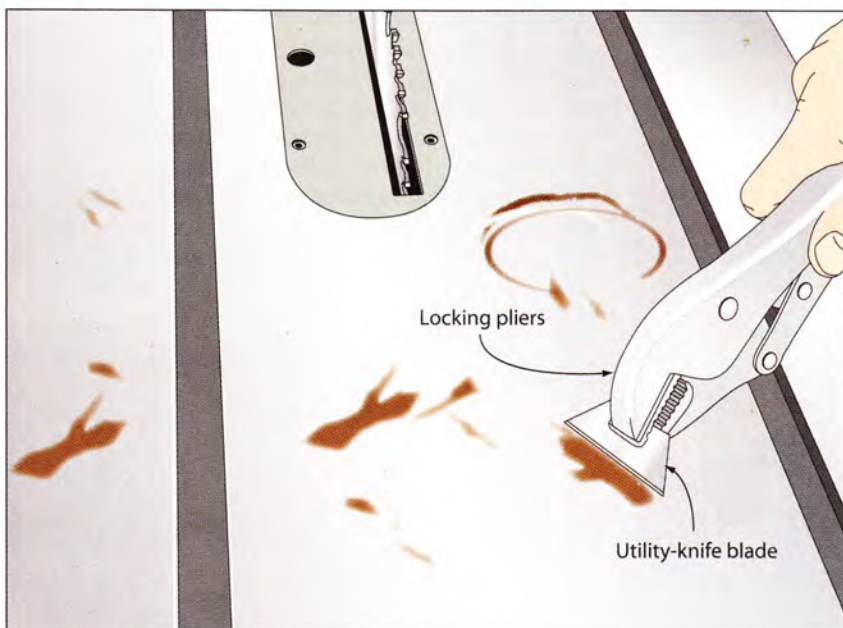


Clean up rust with a simple scraper

After buying a used and neglected tablesaw, I looked for a way to clean up the rust without scratching the table. I found that a utility-knife blade, held at an angle to the table-

top with locking pliers, shaved the rust right off. This simple scraper works well for spilled adhesives, too. Just be sure to replace the blades as they dull.

—Carlton Cooksey, Reva, Va.



How to keep construction lumber straight

Construction lumber (2x4s, 2x6s, etc.) has a high moisture content. When brought into a shop, the lumber typically dries out, causing it to shrink and often twist. Of course, your project will go together easier with straight lumber. Here's a simple solution.

First, select lumber that does not include the center (pith) of the tree. Cut the parts to rough length as soon as you bring the lumber home. Then place the parts in a trash bag, as shown below, and close it with a twist tie. Remove the parts for machining, and return them to the bag until you are ready to assemble them. After building the project, the wood dries, but now twisting of any one part is restrained by the other parts.

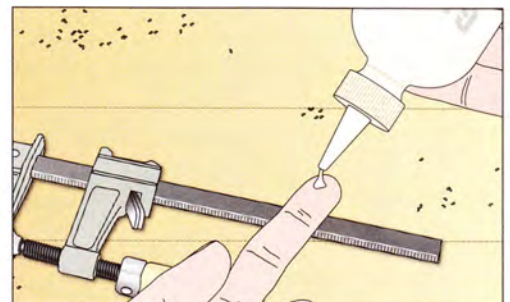
—from the WOOD® shop



On-the-spot solution for stubborn splinters

If you're one of those woodworkers (and I know you are) who get hard-to-remove, little splinters, here's a nifty trick for you. Put a drop of wood glue onto the spot, and cover it with a bandage until the next morning. When the glue dries, it will grab the splinter and peel it out when you remove the bandage.

—Gerald Tavernier, Niles, Mich.



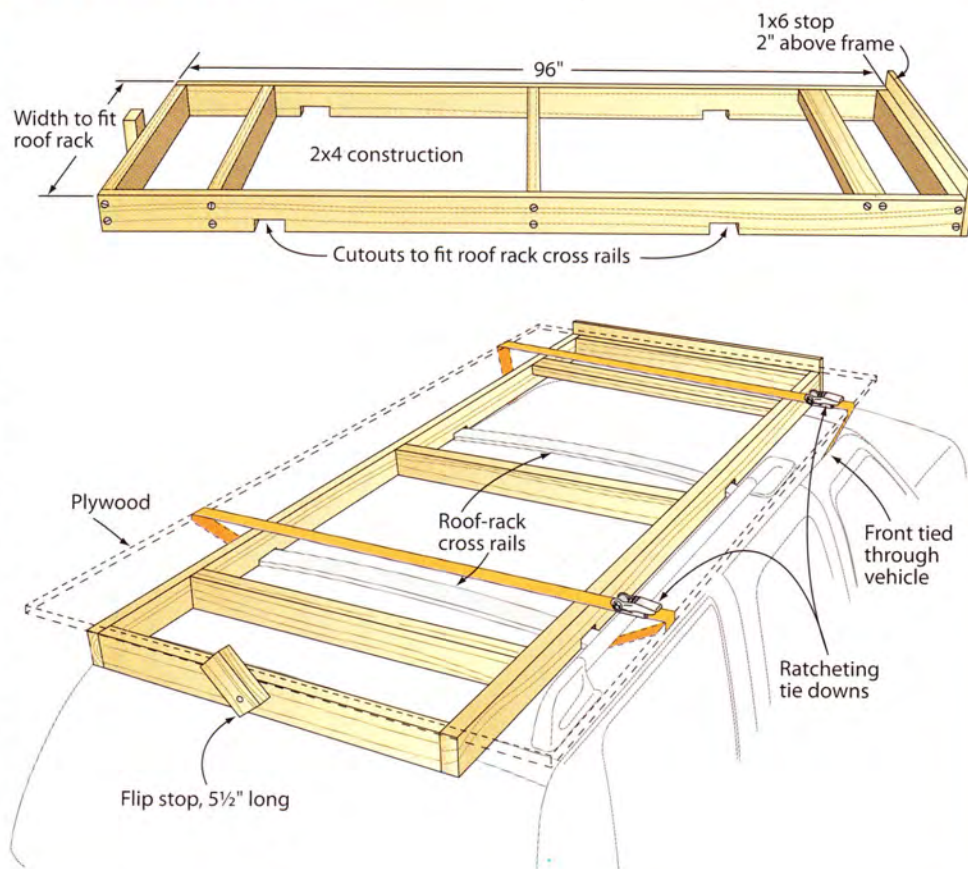
Sheet material rides safely on vehicle roof

I couldn't load 4×8' sheet goods inside my SUV, and those sheets just didn't sit securely on the curved cross rails of the factory-supplied roof rack. To haul whole sheets home safely and easily, I built the carrier shown at right.

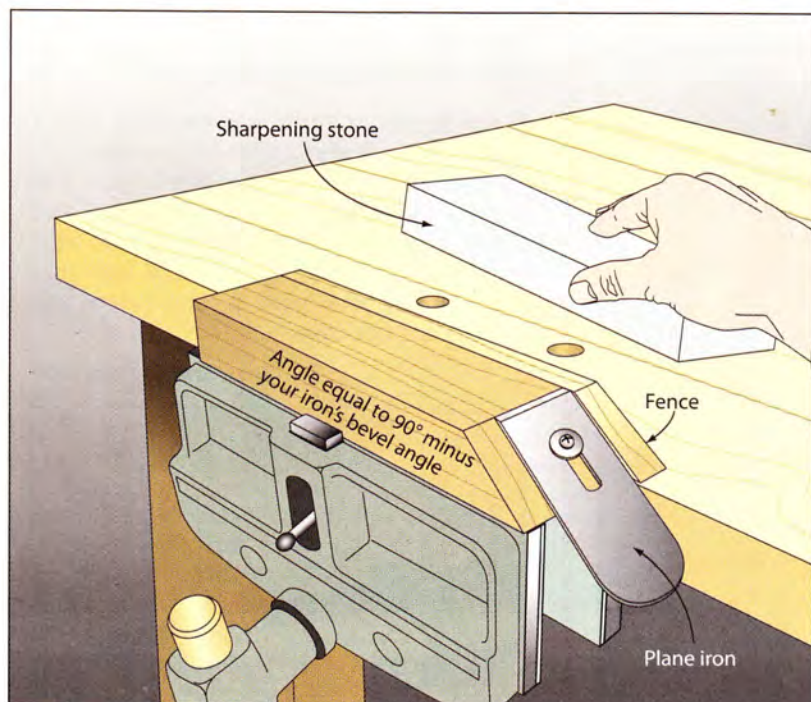
The 2×4 structure fits over the roof rack, which keeps it from sliding and protects the vehicle paint. The 1×6 front stop prevents the load from sliding forward when I brake. (I don't load panels any higher than the front stop.) The rear stop flips down for loading, and up before driving so panels won't slide off the back.

Make sure the weight of the carrier and the material on it doesn't exceed the weight capacity of your vehicle's roof carrier (shown in the owner's manual). After loading, run a ratchet tie-down strap through the front doors (not the windows) and over the load. Run another strap under the factory roof-rack rails and over the load at the back. Then, drive home on city streets or county roads to avoid high speeds.

—Kevin McLaughlin, Helena, Ala.



Inexpensive jig turns sharpening on its head



This scrapwood jig helps you sharpen plane irons accurately and quickly. To build it, bevel the ends of two scrap boards (one about 3" thick, 4" wide and 8" long, and the other about 3/4×3×8" as shown) to match the bevel angle of the plane iron. Leave the smaller board about 1/8" forward of the other to create a fence to square the iron against; then glue the two boards together.

Position the plane iron against the fence with the bevel slightly above the top face of the jig, and secure it with a screw and washer. Now, guide your sharpening stones against the top of the jig to sharpen the iron in no time.

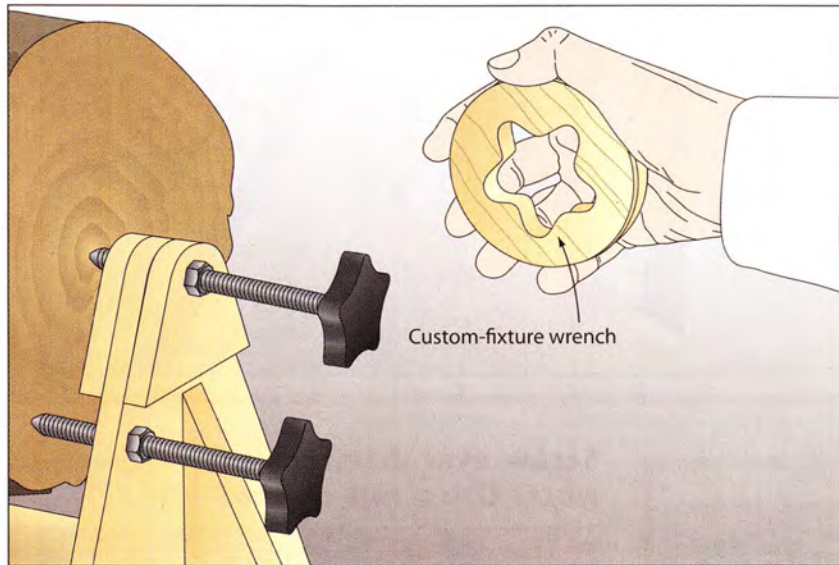
—Don Hansen, Silver City, N.M.

Custom wrench helps you get a grip

When you need a little extra torque for tightening smallish knobs on shop tools and jigs, try this shop-made wrench. The larger diameter makes it easy on hands and

increases your leverage. Simply trace the shape of the knob on a scrap of wood, and scrollsaw or jigsaw the opening to shape.

—Steven Waskewicz, Elbert, Colo.

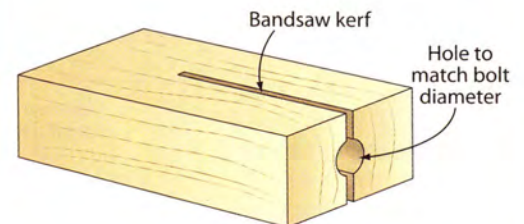


Cut bolts clean with no shredded threads

To cut bolts to length with a hacksaw, I made a simple bolt-holding jig from a piece of scrap hardwood. After drilling a hole the length of the scrap, where shown below, I cut partially through the center of the jig with my bandsaw. When tightened in a bench vise, those jaws pinch the bolt firmly for a wiggle-free cut.

And here's a trick to clear those threads that invariably get messed up during the cut: Thread a nut up the bolt before you cut; then remove it after. This cleans up any mashed threads. If you plan to cut more than one bolt to the same length, mark the location of the bolt's tip while in the jig for a quick reference point.

—Don Stanley, Jefferson, Ore.

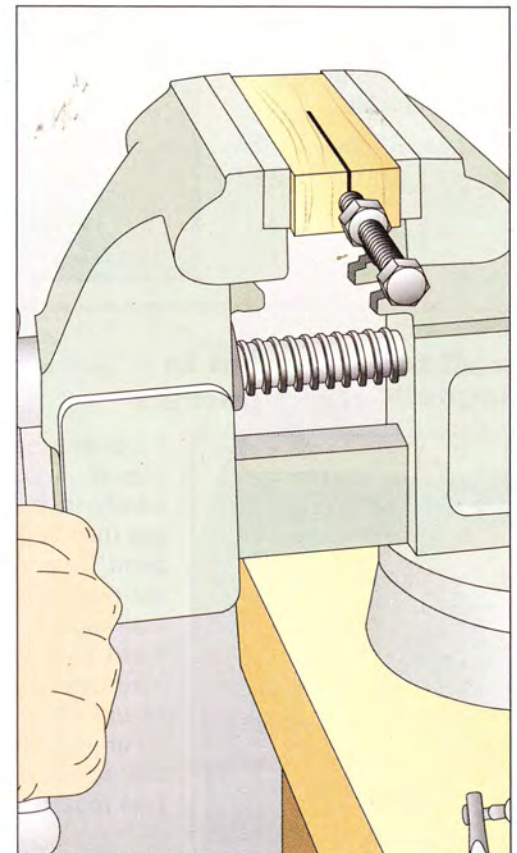
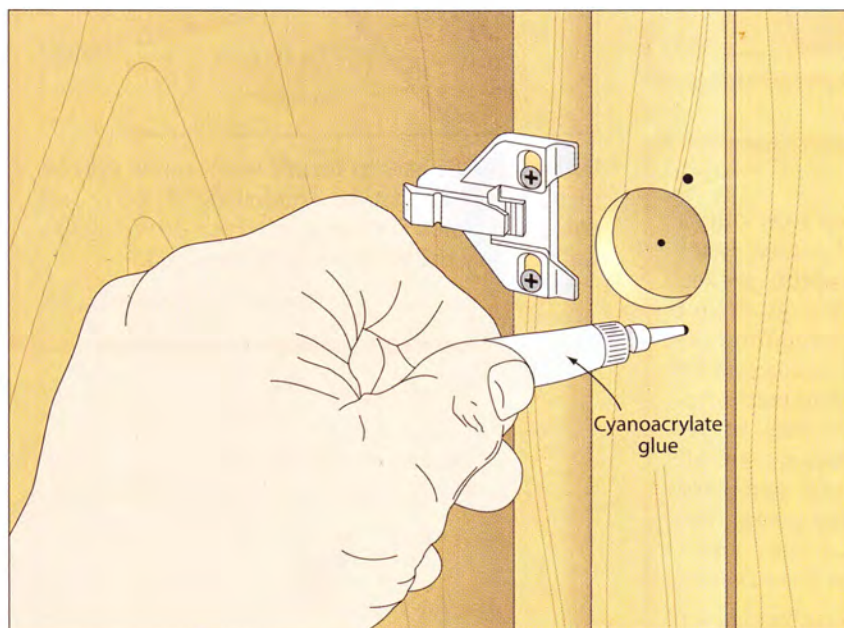


Superquick fix for stripped screw holes

The small screws needed for hinges strip out pilot holes easily. Fortunately a little cyanoacrylate (CA) glue fixes them just as easily. Simply

fill the stripped hole with CA glue, let it cure for a few minutes, and reinstall the screw. It works for any size screw and any type of wood.

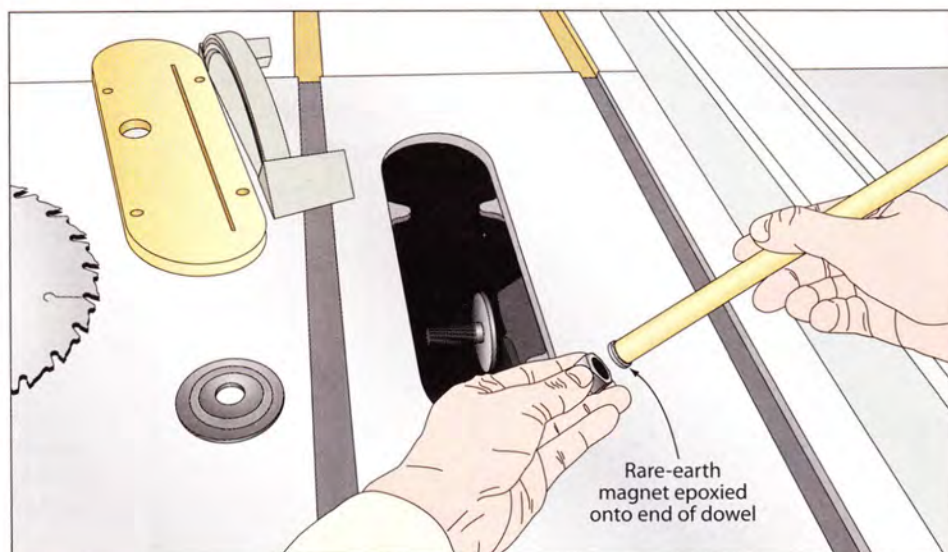
—Erv Roberts, Windsor Heights, Iowa



Find buried treasure while keeping your hands clean

Few things are as frustrating as watching a small metal part, such as an arbor nut or washer, disappear into a deep pile of sawdust at the bottom of a tablesaw cabinet. I don't get worked up anymore since I epoxied a rare-earth magnet to the end of a 36" dowel. I simply plunge the magnet end into the dark depths and quickly find that needle in the haystack (and sometimes, a few other things as well).

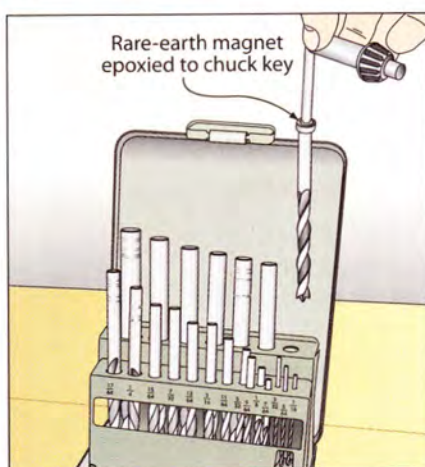
—Lawrence Byers, Lansing, Mich.



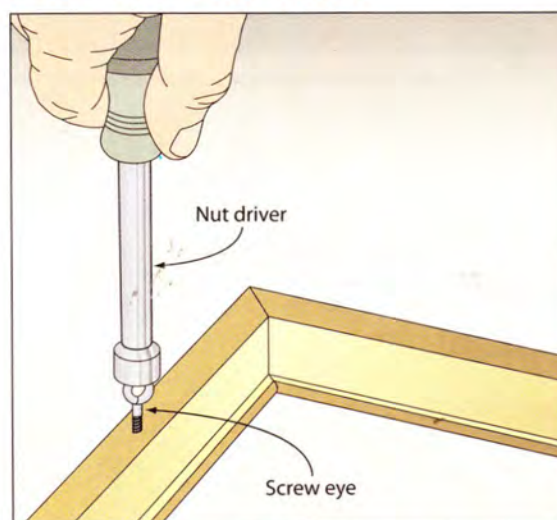
Go fishing with magnetic bit bait

My large fingers have trouble pulling drill bits out of their metal case: I just can't seem to pull them straight out without binding. So I epoxied a small rare-earth magnet to the arm of my drill-press chuck key. Now I can just reach right in and snag any bit.

—Sid Jackson, Candle Lake, Sask.



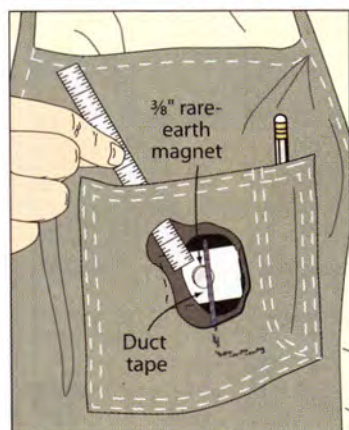
Screw eyes driving you nuts? Use a nut driver



Using large fingers to install small screw eyes in picture frames can be frustrating at best, and painful at worst. For me, a set of nut drivers works well to drive the hardware into the wood.

—Robert Marchant, Deltona, Fla.

Small tools stay put in magnetic sticky pockets



I like to keep a small steel rule, a punch, and other useful items handy in my shop-apron pocket. But they frequently fall out when I bend over to pick something off the floor. I solved this problem by duct-taping a $\frac{3}{8}$ "-diameter rare-earth magnet on the back of my apron, behind the pocket. Now all of my metal odds and ends stay securely tucked in my pocket, but not so securely that they aren't easy to retrieve when I need them.

—Andy Newhouse, Syracuse, N.Y.

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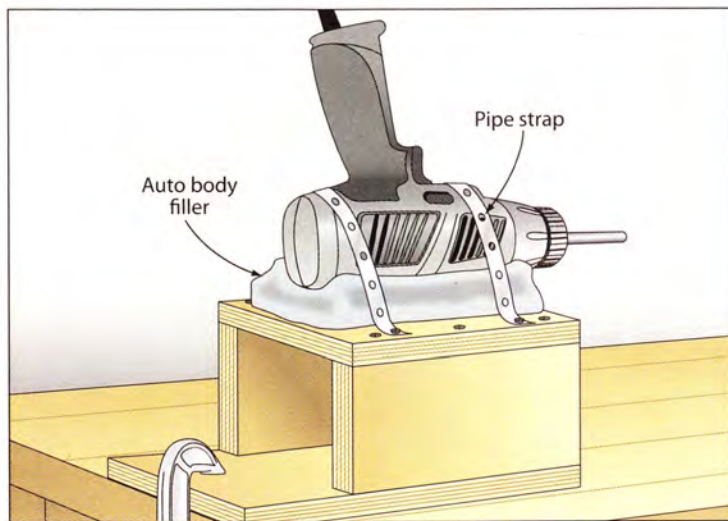
Mounting method for the uneven tool

I needed to use my portable drill as a temporary, poor-man's lathe, but its irregular shape made it difficult to clamp down. So I made the custom tool holder shown *below*.

Start by making a scrapwood base to raise the tool above bench height. Next, wrap the tool in kitchen plastic wrap to protect it temporarily. Place a generous blob of auto-body filler (such as Bondo, 3M.com, 888-364-3577) on the base, and press the tool into the body filler, taking care to not block controls and ventilation holes. While the filler is still pliable, level or adjust the tool position as needed.

After the filler hardens, remove the tool and discard the plastic wrap. And finally, secure the tool to the stand with pipe strap. You can use this method for other odd-shape tools, such as a belt- or random-orbit sander.

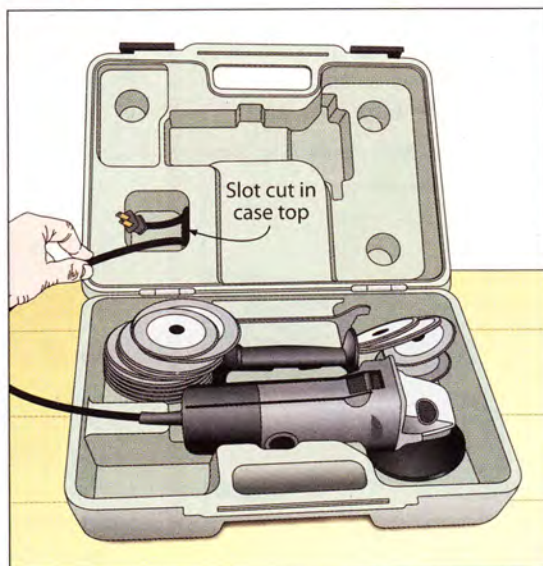
—Tod Jervey, Powell, Ohio



Turn extra case space into a cord catcher

Those plastic cases that tools come in never seem to fit the tool's cord once it's unfurled. However, there seems to be ample "filler" space in the molded top. I take advantage of that space by drilling and cutting out a large slot in the top of the case, as shown. The cord stores easily in-side and stays contained while I close the case.

—Dave Jenkins, Cuba, N.M.



Mend more than furniture with your pocket-hole jig

For years we lived with creaky and squeaky floors. At one time these creaks were useful when they helped us detect when our teenagers were late for curfew; but with the kids grown, the squeaks are merely annoying.

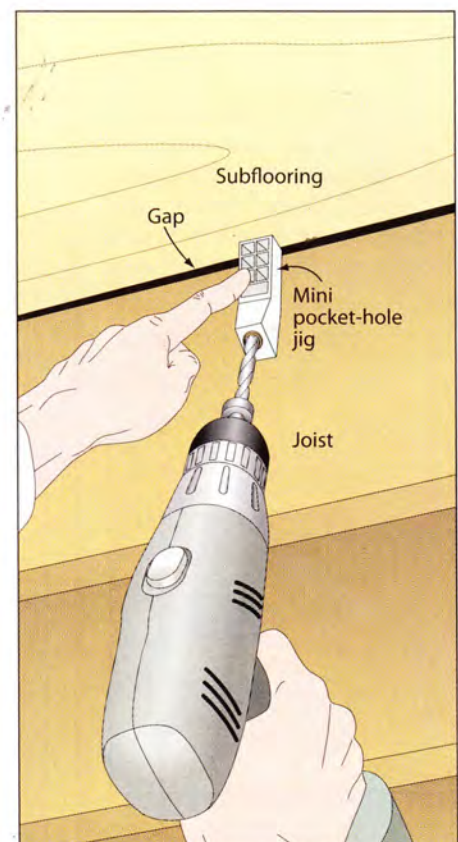
To silence the squeaks, I used a portable mini pocket-hole jig that's intended for furniture repair. I simply locate the squeaky spot by having my wife walk around on the floor until I have it pinpointed. Then I use the jig to bore angled holes. Next, I drive in washer-head screws to pull the subfloor tight to the floor joist, as shown *below*.

For extra insurance, I squirt a bit of woodworking glue into the gap before driving the screws. Also, I drive several screws along the gap to make sure it's fully closed.

—Pete Eisinger, Laingsburg, Mich.

Subflooring can vary in thickness from $\frac{3}{4}$ " to more than 2". Before using this technique, it's important to know its thickness so you can choose the correct screw length. Usually, you can find this thickness by pulling out a floor heat/air vent and looking at the cutout edge. Be certain you don't drive screws all the way through, where sharp hidden screw points can lie in wait under the carpet.

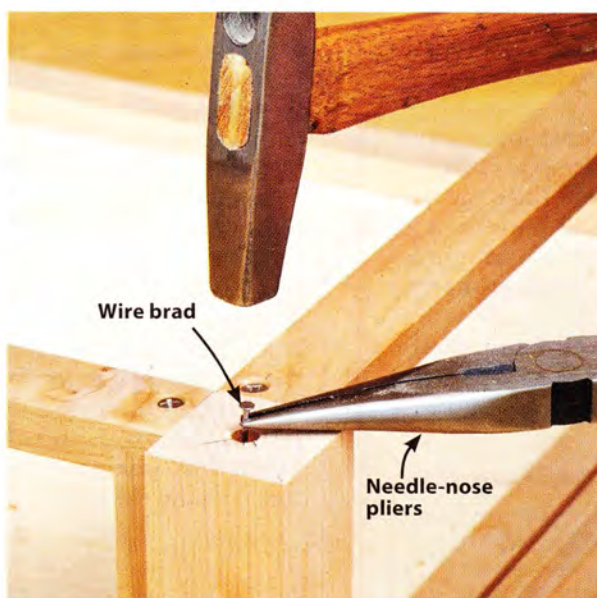
—from the WOOD® shop



Finger saver

Do large fingers prevent you from gripping and striking small brads? Hold those short fasteners with a pair of needle-nose pliers instead. Rest the pliers on top of the workpiece to steady them as you drive the brads.

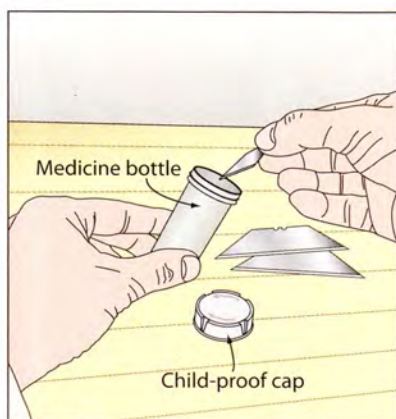
—from the **WOOD®** shop



Safe storage for sharp garbage

Every once in awhile, I throw away something by mistake and have to do a little digging in the trash to retrieve it. I get skittish, though, because I never know if I'm going to plunge my hand onto something sharp. To avoid this potential hazard, I keep a medicine bottle on my workbench in which I accumulate used utility knife blades, razor blades, and other sharp waste products. When the bottle is filled, I cap it and discard it.

—Stanley Krasovic, Honesdale, Pa.

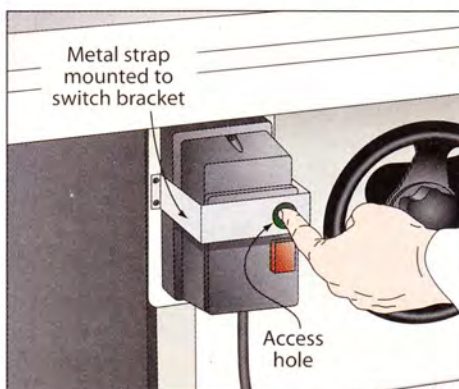


Strap adds extra margin of tablesaw safety

A coworker recently had a close call with our cabinet-style tablesaw. While using his tape measure to set the rip fence, he leaned against the saw. The key ring in his pants pocket accidentally pressed the saw's recessed "start" button—with his hand only about 1/4" from the blade. Fortunately, he wasn't injured, but after seeing this near accident, I decided to add an extra measure of safety.

I shaped a metal strap to fit over the switch box and stand out from the start button about 1". I then drilled an access hole in the strap and mounted it over the switch box with the hole directly over the start button. Now, to turn the saw on, you really have to *want* it to start.

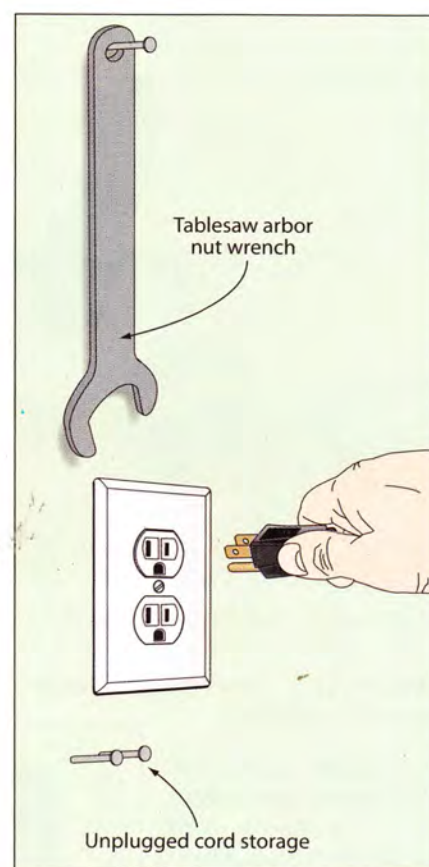
—Mark Patrick, Ionia, Mich.



An off-the-wall tablesaw safety reminder

We all know that it's good safety practice to unplug your tablesaw before changing the blade. But sometimes we get in a hurry or forget. To remind myself, I hang the tablesaw's arbor-nut wrench on a nail near the the outlet that powers the tablesaw. When I need the wrench, I know to unplug the saw as well. The saw cord's plug hangs on two close-set nails so it's ready for me when it's time to plug it back in.

—Oliver Cook, Knoxville, Tenn.



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Shorter Open Time	✓	✓
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